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ON THE COVER: Wearing a paint scheme inspired by that worn by B-25J-2 *Paper Doll*, which was flown by Lt. J. W. Yerger of the 447th BW/321st BG in Corsica, 1944, this restoration by Ron and Diane Fagen is the newest addition to the warbird community. Their company, Fagen Fighters Restorations (fagenfighters.com) has restored a wide range of fighters but specializes in P-40s. (Photo by Paul Bowen)

THIS PAGE: Striking a dramatic pose at sundown, the B-25 is one of the most identifiable aircraft of WW II. Like the P-40, it was there at the beginning and fought right to the end. (Photo by Heath Moffatt)

Barrett Tillman

The Forgotten French Fighter

Despite having written over 120 *Flight Journal* articles, I'm always interested in "new" subjects, including old or obscure airplanes. France's MS.406 of 1934 vintage fits that description, but at one time it was considered "the most modern fighter" on Earth. How it was used by numerous countries — both Allied and Axis — made for an intriguing research project. Besides both French air forces, the Morane was used by Finland, Switzerland, and others. So, strap in, *mon ami!*



Jan Tegler

Neptune's Fire

No single military aviation community has a corner on fascinating stories. But there are some we don't hear from often. Maritime patrol (MPA) is one of them. From the seaplanes of the interwar period and the "Black Cats" of WW II to today's ASUW and intelligence-gathering platforms, the MPA community has gone in harm's way time and again to protect our interests. Ron Garman's harrowing P2V tale typifies the courage of the community, and I felt this story deserves to be heard.



Thomas McKelvey Cleaver

Operation Bingo

I first read *Catch-22* on my way to war; it made much more sense when I read it again after serving in that war. Over the years, I have been interested finding out the real story of the bombers that flew from USS *Corsica*. Meeting B-25 pilot Paul Jackson last year allowed me to do that and write this account of the Battle of the Brenner Pass, a decisive battle that's not widely known.



James P. Busha

Georgie Boy

Although "nose art" had been around almost since the airplane first took flight, it really came to the forefront during WW II. For the pilots and crews of these flying machines, they thought of these flying machines as living beings and adorned them with a variety of likenesses from cartoon characters to naked women and everything else in between. But as you will read in "Georgie Boy," the nose art pilot Ken Helfrecht chose for his Mustang had special meaning not only to him, but to all the other pilots in the 4th FG because it truly represented what they were fighting for.



Walter Boyne

If the Wright Brothers Had Been Wrong

There are so many opinions on airpower, that I felt drawn to the fact that its very first use in warfare was decisive on two fronts. The most important implication from this is that in this first, decisive use of airpower, immediate attention was paid to the aviation input, and an appropriate action taken. Given how young aviation was, it is instructive to imagine what WW I and the 20th century would have looked like if the Wright brothers hadn't been successful and aviation's effects had been delayed ten or 15 years.



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North American Aviation's ubiquitous B-25 Mitchell delivers its payload at low level; twin Wright R-2600 radials thundering overhead at deafening decibels. (Photo by Brian Silcox)

It's All the Wright Brothers Fault!

BY BUDD DAVISSON

WE'VE DONE SOME INTERESTING ARTICLES in *Flight Journal* but Walt Boyne's always-inquiring mind laid an intriguing question on the table that, if kept in mind, puts a whole new perspective on the rest of the issue. The question was a simple one with incredibly complex overtones: "What if the Wright Brothers had been unsuccessful and the airplane was another 10 or 15 years coming along?"

It's obvious, when reading "If The Wrights Had Been Wrong," that, even if the Dayton tinkers had thrown in the towel, someone, somewhere would have invented the airplane. But when? Let's say it took 15 years and the first flight wasn't made until 1918. As Walt points out in his imaginative ramblings, WW I would have started exactly as it started originally and for the same reasons. But, without the all-seeing eyes of the airplane, the war could have lasted only a year or two. Hundreds of thousands of lives would have been saved. More importantly, the airplane wouldn't have benefitted from the artificial push that technological advances always receive due to combat. During WW I, aviation put forth a new generation of flying machine almost every year. So, when viewing later 20th century aircraft and conflicts, one has to ask, exactly what kinds of flying machines would have existed, to do the fighting had aviation not started developing, when it did?

Let's take the French Morane MS.406: a nearly forgotten fighter of WW II. It flew in 1935, by which time, when compared to its peer group, the Bf 109 (1935) and Spitfire (1936), it was already obsolete. The MS.406's moments of glory were few and short lived before disappearing from history's memory.

Today, only one is still flying and we have outrageous color of it. Of course, had Orville and Wilbur not persevered, nothing approaching the MS.406's technology would have even existed.

The way the Mustang leap-frogged structural and aerodynamic advances was almost entirely because the threat of war offered strong incentives to think outside the box. War's impetus was again at work. But when Capt. Ken Helfrecht was introduced to the P-51B in England in 1944, he wasn't thinking about how much he did, or didn't, owe the Wrights. According to author, Jim Busha, as the young fighter pilot had the face of a young man who was helping his mother at home painted on the cowl with the name *Georgie Boy*, all he knew was that he was flying the finest fighter on the planet. Without knowing it, for better or worse, he owed the Wrights for that.

The pilots and crew of the 321st Bomb Group had plenty of reason to curse the Wrights. Were it not for the brothers' success, the B-25s wouldn't have been funneling their formations through the heavily armed Alpine pass that the Germans had to keep open or their Italian campaign was doomed. If aviation had been 15 years later in developing, those pilots would have been doing reconnaissance in biplanes and not fighting their way through smothering flak trying to deliver bombs on tiny targets.

And so it goes throughout this issue: when reading any of the articles, all of which have to do with the derring-do of pilots challenging the odds, think of how different the situations would have been had the Wrights been wrong. If they had failed, we'd have airplanes, but we would be living in a different world today. Count on it. ✚

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Remembering Those We've Lost

I'm a friend of Frank Walker, who was featured in the story "The Rescue of Lady Ace" in the December 2014 issue of *Flight Journal*. Frank sent me your magazine. I met Frank at a ceremony to honor his cousin, twice removed, Lt. Neill S. Walker. Lt. Walker's Spitfire plane crashed behind my house in Italy on December 15, 1943. At eleven years old at that time, I was the first person to arrive at the plane. Then the Germans arrived. When they pulled Lt. Walker out of the Spitfire, he was declared KIA. The Germans gave my mother permission to bury him and left. Lt. Walker was buried next to his plane, as an unknown American fighter pilot! We never knew the name of the fighter pilot until March 7, 2014, when I Googled my mother's name, and there it was ... I believe Lt. Walker should have been included in your other article about "Americans who died so that England might live" ("Hurricane Heroes from the Colonies").

Thanks to my hero in South Carolina, Frank, and his cousins, our language hasn't changed. I did not serve in the Air Force, but I'm an Honorable Discharge 1st Inf Div, 63rd Tank Battalion American Soldier; yes, The Big Red 1!

Guy Simonelli

Thanks for your memories, Guy. This is how history is passed down. — BD

USN Top Ace Forgotten

I was so glad to read the mentions on David Mc-

Campbell on the October 2014 issue of *Flight Journal*. I'm afraid this ace was forgotten by biographers; while most top aces of WW II have had their biographies written (some more than one), there's no book on the Navy's top ace life. Too bad he passed away without telling his stories to some gifted writer.

Keep up the good work!

Ernesto Franzen

McC Campbell is far from forgotten by those who treasure history. —BD

I Want a Spit and Hurricane Nose to Nose!

First, I think the Hurricane looks pretty good. I would like to read a comparison of flying/fighting with the Hurricane to the Spitfire. Second, I'd like to know if is there any info about gunner, Bill Jorgensen who flew with pilot Ben Case in the SB2C?

Henry Williams

We'll see what we can do on both counts. —BD

Another Perspective on the Rescue of Lady Ace

What a surprise and a most welcome article about the rescue of Lady Ace 7-2 from the perspective of the team that carried it off.

The day before D-Day of Lam Son 72 Phase II, the Amphibious Ready Group (ARG) closed the coast off Quang Tri and at some distance

A War Orphan's Thanks

Here's just one reason I read *Flight Journal*. Your October 2014 issue on "The Mighty 8th" sure caught my eye on page 22 – the caption showing a crew from Kings Cliffe, the USAF station #367 that my father, Maj. John Campbell Wilkins, flew out of and eventually became MIA in a P-38, November 7, 1943. Your attention to detail and having met Barrett Tillman at The Museum of Flight here in Seattle some years ago brings me back to your "history book" every month.

Like many of the approximately 70,000 "war orphans," I am continuing to build the chronological story of dad's life and career. Barrett sure contributed to my effort when he told me about the text *The First Team and the Guadalcanal Campaign*, an excepted source of WW II history. On page 169, the author states that my father was "the first carrier-qualified Army fighter pilot." From the eyes of a "war orphan," that little nugget moved my father up the ladder from just being father to war hero.

The book also mentions that he flew with Marine Ace Marion Carl and was involved with the strategic aerial planning initiated by Rear Admiral McCain. Great magazine and keep up the good work!

Steven C. Wilkins

Steve, it's the service and the sacrifices of so many fathers, husbands, and sons that make us want to tell their stories in Flight Journal. Thanks. — BD

Increasingly, readers are dropping us letters when they find a father or relative in one of the photos we feature. It's gratifying when that happens.





Your Daily FJ

Have you visited us on the web? Well, what are you waiting for? FlightJournal.com is full of fun regular features such as "On This Day in Aviation," the latest goings-on in aviation news and reports that can feature anything from the first hot air balloon flight, the little-known story of a WW II ace, to how WW I changed aviation forever.

Screen Savers and a World Without The Wrights

One of the more intriguing pieces in this issue wonders how the world and its wars would have looked if the Wrights had tossed in the towel and aviation had been 10-15 years later getting started. That being the case, rather than the Curtiss P-40 fighting at the dawn of WW II, we have to look back 15 years to the Curtiss P-1 of 1923. With that in mind, this month's screen saver is a great shot of the very first fighter in the Pursuit category, the Curtiss P-1. It's presented in all its sepia-toned beauty. When looking at it, try to remember that as quaint as it may appear, in 1923, it was the F-22 of its day. Enjoy!



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launched Marine CH-53's and H-46's from HMM-165 to Tam My to pick up the ARVN Marines who were to conduct the assault. (USS *Okinawa* and HMM-164 also took part.) This was a dicey operation from the getgo as the troops were to be inserted behind the enemy lines. After the insertion, the ARG Marine aircraft would then return their respective ships.

We stood by to take on wounded as the battle progressed. As Operations Officer, USS *Tripoli*, I monitored the radio traffic during the entire insertion. Enemy ground fire was severe. As I remember it, Lady Ace 7-2 was the only helo hit with a ground to air missile (SA-7). The ARG Marine helicopters did not have self-sealing fuel tanks and once the aircraft commanders determined that their fuel tanks had been holed, there were many emergencies declared. (Of the 38 Marine aircraft participating, 80% took hits.) It appeared to us that a major catastrophe was in the making. A CH-46 returning to *Tripoli* had its starboard landing gear shot off and was also leaking fuel, but fortunately, the Air Boss had anticipated such a happening and had the pilot hover over a homemade dolly that was placed under the stub of what remained of the landing gear so the aircraft could be cleared off the deck rapidly. No ARG helo was lost returning to their ships as I recall.

It was one of those moments in time that fit in the category of "hours and hours of boredom interspersed with stark moments of terror." The



professionalism demonstrated by those Marine helicopter pilots was awesome as was the performance of the flight deck crews on the ships in the ARG. Thanks to those brave men who put their lives on the line to rescue the survivors of the Lady Ace 7-2 crew.

Captain "Buck" Buchanan, USN (Ret.)

Lady Ace 7-2 Copilot, Captain Henry Bollman in a bomb crater after the crash. Photo was taken by Lance Corporal Stephen Lively, a combat photographer who was on the helo. (Photo courtesy of Jon Morales)

WOW! Thanks for giving us another perspective on the operation. -BD ✚



For a 1934 design, this
MS.406 displays classic
lines 80 years later.

THE FORGOTTEN



Outclassed from the beginning, the MS. 406 still took its toll

BY **BARRETT TILLMAN** PHOTOS BY **LUIGINO CALIARO**

Imagine a World War II fighter that flew combat with both the Allies and Axis; fought Germany, Italy, Japan, Britain, and Russia, with an operational career lasting from 1938 to 1948.

Meet France's Morane-Saulnier MS.406.

In 1934 — when the French Air Force became an independent service — the air ministry issued a request for what became “the first modern French fighter.” The Morane-Saulnier firm, established in 1911, responded with surprising speed, delivering the prototype MS.405 that flew in August 1935. Chief engineer Paul-René Gauthier had joined the company as

a draftsman during the First World War, completed his degree, and rose to technical director in 1930. Four years later, his team produced an all-metal cantilever monoplane with retractable landing gear. It was evaluated to good reviews, pegging 400 km per hour (250mph) at sea level — a first for French fighters — and 300mph at 13,000 feet.

FRENCH FIGHTER

Lost in context of the era was the fact that another European fighter first flew in 1934 — Messerschmitt's lethally long-lived Bf 109. In a word, the difference between the Morane and the Messerschmitt was "longevity." The Morane was obsolescent when the crisis broke six years later whereas the 109 was just beginning to show its "stretch."

When Germany announced formation of the Luftwaffe in 1935, a French newspaper confidently reported, "The French Air Force is stronger than Germany's. It is stronger numerically, its pilots are better trained, and French planes are as modern as those of Germany." That year, France's front-line fighter was the Dewoitine D.500, an open-cockpit fixed-gear monoplane with merely 380 produced.

However, development of the new Morane lagged badly, and the second prototype didn't fly until January 1937. Following changes to the engine and propeller, a pre-production batch was ordered as the MS.406, including a retractable radiator to reduce drag. The new fighter made a favorable impression at the 1938 Paris Air Salon, marking a landfall for the company: 1,000 aircraft ordered in March.

Early production 406s were delivered in September 1938, one year before war erupted. However, squadrons did not begin working up the new fighter until early in the new year.

Another problem was excessive variety. In 1939, the French Air Force and Navy operated a bewildering number of aircraft types. A quick count shows nearly 30 manufacturers, including Curtiss, Douglas, and Martin. Facing a major war, the nation and the air force needed greater numbers of fewer types. The 406 was France's most numerous fighter but ultimately, total production was barely 1,000.

With war appearing imminent in 1936, Paris took drastic measures. The aircraft industry was nationalized in hope of improving efficiency. But unaccountably, the engine producers remained privatized, and failed to build powerplants comparable to the 1,000 to 1,200 horsepower units of Britain, Germany, and America. When deployed in 1938, the Morane's 860-hp engine compared poorly to other types.

The 406 was slowest of the French fighters, rated at just 290mph versus 315 to 330 for the D.520, Bloch 152, and Curtiss Hawk. Thus, it ceded nearly 60mph to the Bf-109E.

When Germany attacked Poland in September 1939, history's clock began ticking in Paris. Thus, when France went to war, the *Armée de l'Air* possessed 767 fighters with MS.406s representing 44 percent of the total. The 341 Moranes were deployed with 10 groups belonging to four regiments. The most prominent were Groupes de



Mobile Air Service's MS.406 is a popular sight at European airshows.

SIX MORANES OF GC II/2 CHEWED UP A FORMATION OF BF 110S, CLAIMING SIX IN LESS THAN A MINUTE

The 406 was unlike anything most pilots had flown, with an enclosed cockpit, retractable landing gear, and variable-pitch props. Constructed of steel tubing covered with fabric and aluminum-bonded plywood, the airframe was lightweight. Armament was typical of the period: a 20mm cannon with 60 rounds through the propeller and two wing-mounted 7.5mm machine guns with 300 rounds each.

The type was warmly received, being easy to fly and highly maneuverable, though the wheels tended to extend partially under G. But even after the 406 entered service, problems persisted. Squadrons complained that aircraft arrived from various depots that were to install specialized equipment, but often failed to do so. So there was no standardization amid much cannibalization, leading to general delays in getting a fully complete aircraft into action.

France's aviation productivity remained small if capable through most of the 1930s; one observer described most firms as "more or less on the craftsmanship level" in contrast to burgeoning industries in Britain, Germany, and America.

Combat 2 and 3 with three escadrilles each, all based at different fields.

The other four fighter types included 174 of the fairly modern Bloch 152, which was faster than the Morane but suffered prolonged development delays. The best performers were 120 Curtiss Hawk 75s from America with an excellent high-powered Wight or Pratt & Whitney radial engine mated to an agile airframe. The racy Dewoitine D.520 had just entered service, and the ungainly twin-engine Potez 63s included rudimentary night fighters.

After Germany's conquest of Poland, France had eight months to prepare for the Panzer/Luftwaffe assault in the West, and squandered much of that precious time. The conflict settled into a twilight-zone interim with little combat. During the "Phony War" 14 MS.406s were downed, mostly by Bf 109s, which were faster while possessing greater altitude performance. On March 31, 1940, four flights totaling 11 Moranes patrolled the German border near Morhange, stacked up to nearly 20,000 feet. When the leader's oxygen system failed, requiring him to descend abruptly, his wingmen followed. They were pounced upon by Bf 109Es from JG 53,

enjoying a nearly two to one numerical superiority and an altitude advantage. Three Frenchmen went down with two killed, and four Moranes were damaged for no losses to the Germans.

But in some engagements the French prevailed, as on May 13 when six Moranes of GC II/2 chewed up a formation of Bf 110s, claiming six in less than a minute.

Meanwhile, MS.406 production ended in March 1940 with approximately 1,080 aircraft delivered. However, while the type was entering service in 1939, an upgrade series was started to improve the design. The result was the M.S.410, which included a stronger wing, a simpler fixed radiator in place of the earlier retractable design, four belt-fed MAC guns in place of the earlier two drum-fed weapons, and exhaust ejectors for additional thrust. The additions boosted the top speed to 316mph, an improvement of about 25mph over the 406. Production had just begun when France fell, and only five 410s had been completed.

Assault in the West

When the Western Blitzkrieg broke on May 10, 1940, of nearly 770 *Armee de l’Air* fighters available throughout France, the Morane Saulnier 406 was by far the most numerous, with 340 equipping 18 squadrons. The *Armee de l’Air* fielded some 750 aircraft in the vital Northern Zone but only about

one-fourth of the French air force was based there, with just three groups flying Moranes. In contrast, the Luftwaffe enjoyed the advantage of focusing its strength at the point of attack.

In overall strength, the Battle of France pitted nearly 3,000 Allied aircraft against 5,600 German. However, in terms of modern combat aircraft in the main operating area, the Luftwaffe enjoyed a two-to-one advantage. A bit over half on each side were rated “modern” types such as D.520s, Hurricanes, Bf 109s, and Ju 88s. In any case, it was no pushover. Germany lost 1,400 aircraft and scores of experienced aircrew. On May 10, the first day of the Blitzkrieg, the Luftwaffe lost 87 bombers and fighters, more than the worst day in the Battle of Britain.

The Moranes required far more man hours per flight hour than most 1940 fighters. Consequently, sortie rates suffered when mission strength mattered as never before.

At the conclusion of the Battle of France, nearly 140 Moranes had been lost to enemy action, the highest loss ratio of all French fighters. Moranes were credited with 171 confirmed victories against 111 known lost in air combat, a claimed exchange ratio of 1.5 to one. In truth, it probably was less.

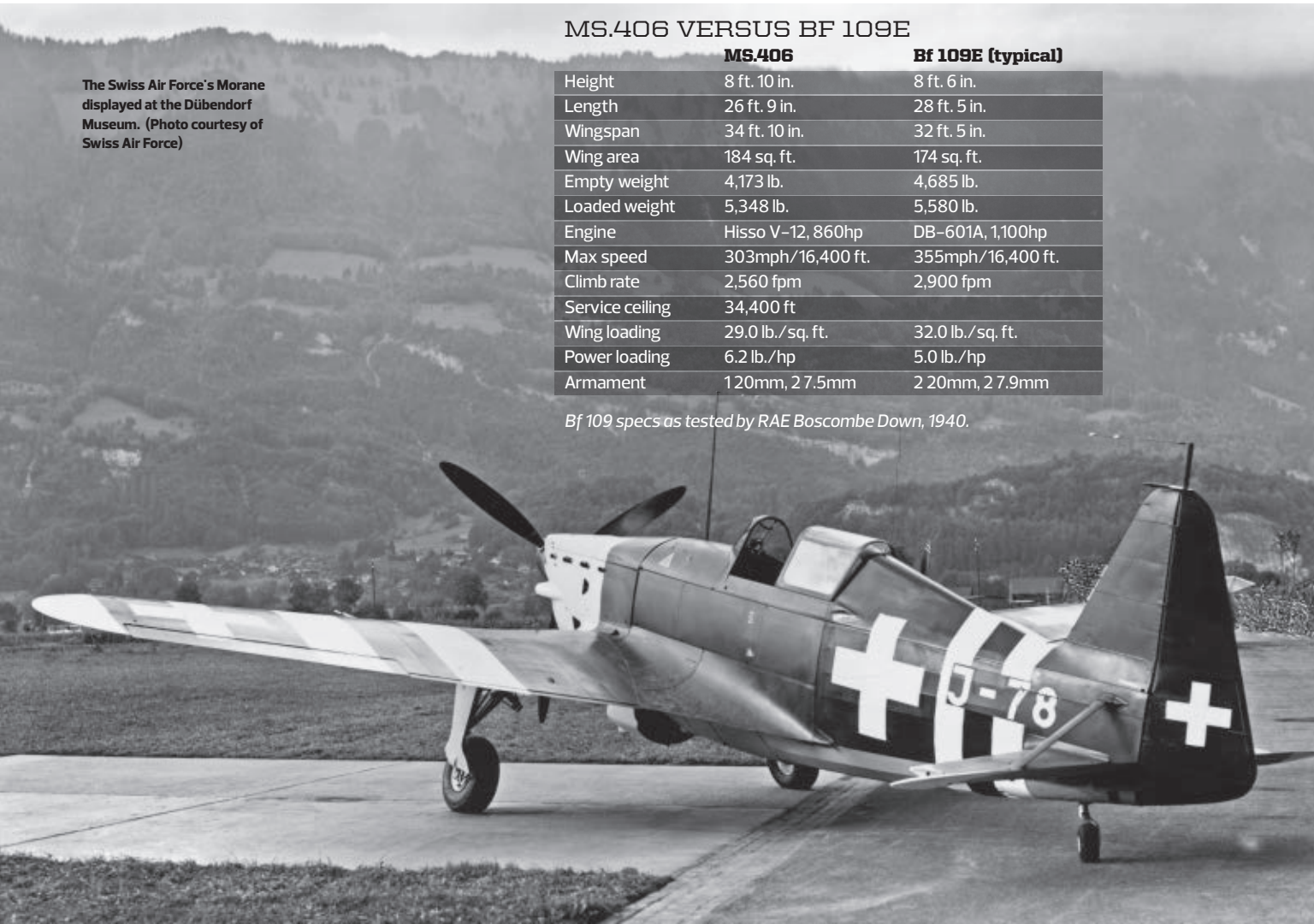
French fighter units were based on a three-plane flight, a leader and two wingmen, usually with two or more flights operating together. Frequently

The Swiss Air Force’s Morane displayed at the Dübendorf Museum. (Photo courtesy of Swiss Air Force)

MS.406 VERSUS BF 109E

	MS.406	Bf 109E (typical)
Height	8 ft. 10 in.	8 ft. 6 in.
Length	26 ft. 9 in.	28 ft. 5 in.
Wingspan	34 ft. 10 in.	32 ft. 5 in.
Wing area	184 sq. ft.	174 sq. ft.
Empty weight	4,173 lb.	4,685 lb.
Loaded weight	5,348 lb.	5,580 lb.
Engine	Hisco V-12, 860hp	DB-601A, 1,100hp
Max speed	303mph/16,400 ft.	355mph/16,400 ft.
Climb rate	2,560 fpm	2,900 fpm
Service ceiling	34,400 ft	
Wing loading	29.0 lb./sq. ft.	32.0 lb./sq. ft.
Power loading	6.2 lb./hp	5.0 lb./hp
Armament	120mm, 2 7.5mm	2 20mm, 2 7.9mm

Bf 109 specs as tested by RAE Boscombe Down, 1940.



a formation was led by a noncommissioned pilot — whomever was most experienced. That tactical flexibility was important with an aircraft technically inferior to the opposition.

Sergeant Pierre Boillot of *Groupe de Combat* II/7 was a successful Morane pilot with four confirmed victories and one probable. He recalled, "Intruding Heinkel 111 bombers that we endeavored to intercept were almost as fast as our fighters, and Dornier 17s and Junkers 88s were capable of showing us a clean pair of heels.

"The Messerschmitts were very much faster than our Moranes, being able to out-climb and out-dive them, but heaven be praised, the MS.406 was the more maneuverable airplane and could always out-turn its German opponent; an advantage without which our casualties would have been multiplied many times ... This superior

maneuverability told when we found ourselves opposing the less-experienced Luftwaffe pilots foolish enough to allow us to gain a convenient position from which we could make effective use of our very destructive Hispano-Suiza cannon. One shell through that poorly protected fuel tank aft of the 109E cockpit!"

In summary, a U.S. Air Force survey concluded, "The story of the French Air Force is one of gallant and competent individual performances that made no perceptible difference in the outcome of the battle."

Meanwhile, Lithuania and Yugoslavia ordered two dozen Moranes but France capitulated before they could be shipped.

The Vichy War

Following the armistice in June 1940, France was divided into occupied and unoccupied zones. While Germany established bases in the occupied north, most of the south and overseas areas remained quasi-independent. Nevertheless, the areas controlled by the new Vichy government were obliged to cooperate with Berlin.

Construction of the MS.410 continued under German supervision, with 74 MS.406s upgraded, but apparently most only received the new wings.

Some 450 Moranes remained after the surrender, mostly in unoccupied France. Yet farther afield, Nationalist China had ordered MS.406s in 1938 but upon arrival in Asia in 1940, they were usurped by the *Armée de l'Air* in Indochina. Surely the most bizarre episode was a three-month border dispute with Thailand in 1940-1941. Occasionally, Indochina-based MS.406s clashed with Thai aircraft — a mixture of Japanese and American types. At least two Moranes were destroyed in Thai attacks against French airfields.

In a related incident, Sgt. William Labussiere, a combat-experienced Morane man, shot down a Japanese bomber in Vichy airspace. But he was called on the carpet for engaging a nation that technically was an ally, and his proud logbook entry was excised.

However, most of the Vichy air forces committed to combat were based in Africa and the Middle East. In 1941, two French fighter groups, including MS.406s, opposed RAF and Australian units in Syria and Lebanon, claiming a three-to-one kill ratio. In contrast, the Australians claimed five to one in their favor. GC I/7 logged nearly 600 sorties in May and June 1941, claiming three victories. Their surviving aircraft were taken by the RAF for Free French use. The last MS.406s in the Middle East were trainers retired in mid-1942.

Another brief clash occurred during British operations against Madagascar in May 1942. Two Royal navy carriers — HMS *Indomitable* and *Formidable* — launched strikes against Vichy naval and garrison targets, defended by MS.406s and Potez 63s. The Fleet Air Arm Martlets (Grumman F4Fs) downed six Frenchmen for one loss.

Below: The Morane 406 cockpit configuration required unusual grouping of the instrument panel.

Bottom: Mobile Air Service's airworthy Morane is powered by a Swiss-built Hispano-Suiza V-12.



THE ONLY FLYABLE MORANE

The story of the only flying Morane Saulnier MS.406, or better, the Swiss version D-3801, dates to the 1960s when Mr. H. Dubler noted a wrecked plane inside the St.-Imier pool, for kids to climb on. He understood the importance of the plane and tried to get it. A few years later the owner contacted Mr. Dubler and an agreement was signed to collect the remains of the Morane.

The plane was serialised J-246, confirming that was type D-3801 with the Hispano Suiza built in Switzerland during WW II. Though in poor condition, it was almost complete, leading to an agreement with the Swiss Air Force for display at the Dubendorf Museum. The agreement allowed Mr. Dubler to exchange the plane with some parts of others Swiss MS.406s to restore one to flyable condition. Therefore, he got wings and the fuselage in good condition from two different planes, plus parts from other sources.

Reconstruction of the plane was assigned to warbird engineer Max Vogelsang's team. To rebuild the plane, Vogelsang, used main components from three D-3801s, matching part of the fuselage of D-3800 serial J-84 with the wings of D-3801 serial J-276 with other cellule components of J-143.

The basic structure was still in good shape, aided with a set of plans came from the Swiss Air Force Museum. After more than 2,500 work hours, in October 1995, the fuselage was mostly complete with all the wing skin replaced.

In October 1997, the plane was assembled almost ready to receive the newly restored engine. However, almost three more years were needed to see the Morane back to the Swiss skies after more than six years and 10,000 man hours' work.

The first flight was from Stans-Buochs airport on June 9, 2000, with the civilian marking HB-RCF in Swiss colors.

In 2005, the plane, was bought by Mr. Daniel Koblet, owner of Mobile Air

Service at Bex airport. With the support of other enthusiasts he created the Association Morane Charley-Fox for airshow operations. More than 700 maintenance hours were employed during the winter of 2005-2006 to allow the Morane

to participate to the airshow season. The first color scheme was the Armee de l'Air during the "Phony War" period. In France the interest in the warbird was very high, and the paint scheme helped obtain sponsors.

In 2006, the MS.406 flew 30 hours at 14 airshows, and in 2007 flew another 28 hours at 11 shows. After two years of intensive use, during winter 2007, the plane needed some maintenance, and in spring 2008, after almost 1,000 hours of works, Daniel Koblet unveiled its D-3801 with a new paint scheme: the personal MS.406 coded N458 and serialised 138, flown by the Commandant Marcel Couadou, of the Groupe de Chasse 1/2 Cicognes based at Toul in May 1940.

Early in 2013, after winter maintenance, Daniel Koblet painted the Morane with the original Swiss color scheme as J-143 during the World War II period, to celebrate the 100th anniversary of Swiss Air Force this year. —Luigiano Callaro

J-143 is the only flying example of the MS.406, honoring the 100th anniversary of the Swiss Air Force.



FOREIGN ACCENT THE MS.406 IN OTHER SERVICE



Croatia

44-48



Finland

76

+11 MS.410s



Germany

98

Captured



Italy

52



Poland (in exile)

91



Switzerland

289



Turkey

45

In November 1942, at the time of the Anglo-American Operation Torch in Morocco, Germany disarmed the Vichy regime in Unoccupied France. Thus, nearly 100 MS.406s became available for export to Axis-friendly nations including 44 to Croatia and 52 to Italy. But reportedly only about half of the Italian aircraft were allotted to squadrons.

In 1941, the Vichy government relocated Morane-Saulnier's main plant to Ossun near the Spanish border. The company modified surviving 406s to Luftwaffe requirements but the factory was destroyed by British bombing in early 1944. Morane-Saulnier survived to enter the early business jet market.

Switzerland

Swiss delegates at the 1938 Paris show were impressed with the Morane, leading to an order for two examples for evaluation. The first was provided that fall, and after the second arrived in the new year Geneva sought a license to build the type locally. The result was designated D-3800, with 82 produced by EKW, the Federal Construction Works at Thun in central Switzerland.

The Swiss Moranes were wholly "organic," including home-built Hispano-Suiza engines plus propellers and weapons. Unit deliveries began in early 1940, with three squadrons (*Fliegerkompanies*) equipped that summer. The initial batch was followed by a second version, built by Dornier Altenrhein and SWS at Schlieren, both in the north. Totalling 207 planes, they were designated D-3801. Development problems plagued the new version into 1944, limiting operational use.

The Swiss Air Force occasionally encountered Luftwaffe and Allied aircraft in its own airspace, leading to identification problems, especially with Swiss Bf 109s. In September 1944, the SAF began marking its aircraft with red and white recognition bands to avert additional errors.

Isolated and neutral, Switzerland had little need for a modern air force in the years after WW II. Consequently, the Moranes remained operational until 1948 when they were replaced by Mustangs. Caught in a jet-age time warp, the last examples served as trainers and target tugs for another 10

years. Two upgrades, the D-3802 and 3803, were never built but might have pushed 400mph.

Finland

From December 1939 to January 1940 France sent 30 Moranes to Finland with 30 to Turkey. The first Finnish aircraft were delivered via Sweden, with checkouts in squadron LLv 28 conducted on a frozen lake. Typically, one young pilot, Sergeant Antti Tani, logged his first flight in early March: three landings in the morning and sitting alert that afternoon. He was still studying the cockpit when a scramble to intercept Soviet bombers, the 155-hour pilot took off, vainly trying to catch the raiders on his second flight in-type.

The Finns found the type "technically complicated and labor-intensive in maintenance." Aside from performance, tactically, the Moranes were hampered by lack of radios, and at the end of the Winter War in March, LLv 28 was credited with 11 kills in five weeks.

Additional aircraft followed France's capitulation in June 1940, as the French government sold 27 406s and partially upgraded 410s during 1941. During the 1941-1944 Continuation War against Russia, 41 pilots of LLv 28 and LLv14 claimed 102 kills against 26 losses, a four to one exchange ratio. The ranking Morane ace was Master Sergeant Urho Lehtovaara who scored 14 of his 41.5 victories in Moranes.

However, the Finns required additional fighters to oppose Russia's immense numbers. Always short of front-line aircraft but not lacking innovation, in 1943 the Ilmavoimat cobbled together Moranes with a variety of components including captured Klimov M-105 engines with Soviet propellers and replacement oil coolers. Some aircraft featured Luftwaffe MG 151 20mm cannon owing to shortages of the original Hispano-Suiza. The resulting hybrid was dubbed *Mörkö* or Ghost, featuring airframe improvements which, with 1,100hp Klimov engines, yielded a surprising 325 mph top speed. However, the Continuation War ended shortly after the earliest Ghosts were available.

Last of the breed

Few Moranes survive today, including those in the Musée de l'Air north of Paris and Switzerland's Fliegermuseum at Dübendorf. The sole flier is a composite of three airframes rescued in the 1970s. Operated by Mobile Air Services, the fighter first flew again in 2000, with engineer Max Vogelsang at the controls. The rare bird was sold to Association Morane Charlie-Fox in 2005. Its rarity and quality restoration remind thousands of airshow fans of The Forgotten Fighter. ✚

Thanks to Tony Holmes of Osprey Publishing, Luigino Caliaro, Daniel Koplet, and Captain Gerald Bassin. Visit btillman.com.

LEADING MS.406 ACES

PILOT	NATION	MS. SCORE	TOTAL
MSgt. Urho Lehtovaara	Finland	14	41.5
Sgt. Edouard Le Nigen	France	12	12
2nd Lt. Martti Inehm	Finland	8	8 KIA 1941
Cne. Robert Willame	France	8	8
MSgt. Antti Tani	Finland	7	20.5
Capt. Martti Kalima	Finland	6.5	11
Sgt. Toivo Tomminen	Finland	6.5	6.5 KIA 1941
Adj.-chef Pierre Dorcy	France	6	6
Adj. Albert Littolf	France	6	14
Sgt. Kleber Doublet	France	6	6

France produced 11 MS.406 aces including shared victories.

Finland produced 9 MS.406 aces.

French scores include shared victories.

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Voice Dial	FREE	FREE
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THE EVER-PRESENT SIDEWINDER

BY BARRETT TILLMAN



A Sidewinder on the port rail of an FA-18 Hornet awaiting launch from an aircraft carrier circa 2005.

Kern County, California, 1952: a 1949 Kaiser raced down a desert runway with a streamlined object fitted to a crude bracket on the right side. Lacking a wind tunnel, the passengers — engineers in the front and back seats — took notes on the model's aerodynamic performance.

They were testing the XAAM-N-7, the world's first infrared air-to-air missile (AAM). Sixty-two years later it remains the world standard.

The most widely used AAM in history began at the Naval Weapons Center at China Lake in 1946. The concept of a heat-seeking missile was named Sidewinder for the desert rattlesnake that homes on its victim's body temperature. It was the brainchild of Dr. William B. McLean, a naval scientist. One of his project pilots was then Lt. Wally Schirra who recalled, "He sold his brainchild for the proverbial dollar. He was a wonderful guy to know: innovative, hardworking and fun."

Based on a five-inch rocket body containing barely 20 moving parts, and a solid-fuel rocket motor, the XAAM-N-7 became the AIM-9 to the Navy and origi-

nally GAR-8 to the Air Force. For guidance, McLean's team conceived a rotating reticle mirror system in the seeker head, controlling canards that steered the Mach 2 missile toward its target. Pilots knew the seeker was tracking when they heard a "growl" in their earphones — louder being better.

The 'winder weighed about 190 pounds including a blast-fragmentation warhead of 20 pounds or more. It killed by direct impact or a proximity fuse releasing an expanding-rod cone that severed airframe parts. The early models were produced for about \$1,000 each — roughly \$9,000 today.



With a forward-quarter capability, AIM-9L was one of the most lethal models, here on an underwing missile rail.

With a 25-degree tracking cone, early Sidewinders were only effective against non-maneuvering aircraft from almost directly astern. Due to ground clutter, they had better range at altitude (about two miles) reducing to about 800 yards closer to the earth's surface. But live-fire tests from Douglas F3D Skyknights scored the first drone kills in 1952. Four years later, the first fleet AIM-9 squadrons deployed with F9F-8 Cougars and FJ-3 Furies.

Sidewinder was available to Nationalist China, and on September 24, 1956, "ChiNat" F-86s clashed with mainland MiGs over the Taiwan Strait. The Sabres surprised the MiG-17s at high altitude from astern, with Lieutenant Colonel Li Shu-Yuan and Lt. Qian Yi-Qiang scoring the Sidewinder's first combat victories. Two other MiGs fell to 'winders that day, inaugurating the missile age to air combat.

Though the AIM-9B was deployed to the Navy and the Air Force, subsequent models tended to be specific to either

First combat for the Lima was the 1982 Falklands/Malvinas War when British Sea Harriers' missiles were over 70% effective, scoring nearly all the kills against Argentine jets.

service. The uncooled Bravo seeker head was improved with nitrogen or argon gases or the Peltier effect, providing increasing discrimination of heat sources.

However, during the Vietnam War (1964-1973), U.S. Navy and Air Force fighters fared poorly against Communist MiG-17s and 21s. At the end of the first phase of the war, the overall kill-loss record was only 2.5 to 1. Clearly, something was wrong.

In 1968, Capt. Frank Ault was charged with evaluating Navy air-air combat results, offering recommendations to improve the unsatisfactory victory-loss ratio. His document, the *Air-to-Air Missile System Capability Review*, is best known for recommending what became the Top Gun fighter weapon school. But he also described how industry, the Navy, and fleet squadrons could tweak missiles for better combat results.

Major problems were manufacturers' quality control; maintenance in squad-



Ironically, the Vought F-8 Crusader was called "the last gunfighter" but nearly all its victories over Vietnamese MiGs were gained by AIM-9s.



Viper's bite: an F-16 fires a Sidewinder off the wingtip rail during Air Force development tests.

rons; and aircrew recognition of firing parameters. Ault noted that in three months of 1968, the Navy fired 12 each of Sidewinders and radar-guided AIM-7 Sparrows in combat, with just two kills, both by 'winders.

At war's end, Navy Crusaders and Phantoms claimed 46 MiG kills with AIM-9B/D/Gs while USAF Phantoms and F-105s reported 34 kills with B, E, and Js. The 80 Sidewinder victories were scored from 452 firings for only an 18 percent success rate. However, it was superior to the more sophisticated Sparrow.

In the 1970s, fighter pilots gleefully received the new-generation 'winders with "all-aspect" missiles. Able to track a target from straight ahead, the L and M employed new fusing and cooling for increased lethality. Highly agile, the AIM-9L has a 32-G maneuvering capability. First combat for the Lima was the 1982 Falklands/Malvinas War when British Sea Harriers' missiles were over

70% effective, scoring nearly all the kills against Argentine jets. That same year Israeli F-15s and 16s claimed major victories over Syria.

The Navy expanded the 9M into the R with a focal-plane array largely immune to traditional IR missile problems such as terrain and clouds. The AIM-9P was widely exported with some 21,000 produced.

Finally, in 2003, the AIM-9X featured an off-boresight capability, widely expanding acquisition and firing parameters. It can be mated to helmet-mounted sights, and with thrust vectoring, it's a true dogfight missile, capable of maneuvering against a target aircraft. In 2013, an "X-ray" cost about \$665,000 per round.

With more than 200,000 rounds produced, Sidewinder has been used by more than 50 nations, with nearly 300 kills claimed by the U.S., Taiwan, Britain, Israel, Iran, Pakistan, and Saudi Arabia. In its seventh decade, the old aerial snake still has a lethal bite. ✚



GEORGIE BOY

INSPIRATION TO A FIGHTER PILOT

BY CAPTAIN KENNETH G. HELFRECHT USAAC (RET.) AS TOLD TO AND WRITTEN BY JAMES P. BUSH

The "greatest generation" as a whole did not need a reason to fight. Provoked by a ferocious Axis that threatened to enslave the world, hundreds and thousands of young men answered the call to arms. Preserving freedom, peace and security for future generations were the primary reason men signed up for service. Others saw it as a patriotic duty to their country, while some saw glamour in war. For whatever reason each man had, all were inspired in some fashion or another. And for one young flier, **it took the unselfish act of a six-year-old boy to realize what he was fighting for.** This is Ken Helfrecht's story.

An aviator at the beginning

Shortly before turning eighteen, I had enlisted in the Army Air Force. I acquired an illness that sidelined me for a couple of months. My original class went on ahead without me and when I recovered, I was placed with a group of prior service men. They were a grisly bunch and filled me with a lot of baloney! Training with these rogues caused me to grow up fast, but they also taught me things that saved my butt!

After earning my wings I was selected for fighters. Here I was, not even old enough to drink and barely old enough to shave. The closest thing to any real horsepower I touched before the war was tinkering on used cars. And now, blindfolded with minimal flight time under my belt, they put me into a real hotrod called a P-40.




I really enjoyed checking out in the P-40. I found landings to be real simple, even with the narrow gear. Not only did they give me horsepower, but they gave me guns, too! Learning to shoot with a fixed sight, a trigger on the stick along with a tit on top for dropping bombs all became second nature to me. Unfortunately, I had to unlearn those skills when I arrived in Europe.

Joining the 4th Fighter Group

The pipeline of replacement pilots was starting to build when I was deemed combat ready. I arrived in Goxhill, England, on September 12, 1944, where I was introduced to the P-51B Mustang. I had never been close to one, let alone flew one before. With all the glass and bars over the canopy, it looked like it was dressed with

Opposite page: Ken Helfrecht talks to "Georgie" before his next mission. Above: Ken and Georgie in Madison, Wisconsin just before Ken was shipped overseas. (Photos courtesy of author)



**THE ADRENALINE WAS REALLY FLOWING INSIDE OF ME. THE CHASE
OF THE 190 STARTED UP HIGH AND NOW WE WERE BELOW THE
CLOUDS AS I PULLED BEHIND THE 190 FOR MY SHOT.**

The red nose of the 4th FG Mustangs could be readily identified from a long distance. If an enemy pilot had this view of a Mustang in his rear-view mirror he was in serious trouble. (Photo by John Dibbs/planepicture.com)



French windows; I just hoped I could see out of it. After completing my checkout and orientation of the English coast, I was placed into a fighter group.

I found my name and assignment posted under "Fourth Fighter Group." I rejoiced at the prospect of being a member of the oldest fighter group in the ETO. The heritage of knowing that the Fourth, having been formed around the original three Eagle Squadrons, caused a beaming proud smile across my face. Men next to me thought otherwise. "They kill them left and right there!" "You'll never survive," came the words of "encouragement" from the non-believers gathered around me. It didn't bother me a bit. Besides, I was young and dumb.

Arriving at Debden Airfield, I joined the 334th Fighter Squadron. I began flying combat in late October 1944, but there was something different about the P-51B I was flying. It was still hard to see out of and was colder than an icebox inside, but up front on the dash was a brand spankin' new gyro gunsight; I had never seen one in my short fighter pilot life as all my gunnery training was with fixed sights. I guess during wartime, some things are less formal. I was shown my airplane, given words of encouragement by my crew who said, "Good luck and don't get your ass shot off," and off I went into the unknown world of aerial combat.

Baptism of combat

November 6, 1944. I had survived my first mission and was now cruising along at 20,000 feet on my second mission. I couldn't take my eyes off the fancy gunsight, trying to figure how it worked. Shortly after 11:00 a.m., a Fw 190 came roaring at us from behind and shot down Second Lieutenant John Childs who was up ahead in his Mustang, QP-Z. I was flying wing on my flight leader Bob Dickmeyer as we poured on the coal to catch the fleeing bandit. R/T chatter became unintelligible as people began talking and screaming when they shouldn't have. Dickmeyer was trying his darndest to get hits on the fleeing 190 when he unloaded his guns and began firing tracers, indicating he was almost out. Although the R/T chatter was garbled at times, I could clearly hear Dickmeyer yell at me to "Come up here and get that German SOB!"

The adrenaline was really flowing inside of me. The chase of the 190 started up high and now we were below the clouds as I pulled behind the 190 for my shot. Sensing that I was near, the German jinked his stick back and climbed to reach the scud layer above. Instinctively, as I had been trained, I pulled the trigger. No recoil, no tracers, no hits, no nothing. I pulled the trigger again as we both entered the cloudbank. Were my guns even loaded? Jammed maybe?

Although I was in a cloud, the cloudiness in my brain cleared and I figured out what I was

doing wrong. The Fourth Fighter Group was a descendent of the Eagle Squadrons which had flown Spitfires, and therefore did not use a trigger for firing the guns. They used the button on top of the stick to fire their guns. The trigger on my stick was for dropping bombs. As I exited the clouds, I was ready to shoot anything that moved, including the bandit in front of me! There he was, dead ahead. My finger resting on the tit, I lined up the enemy airplane using my “super duper gyro sight” and fired at him. The “enemy” turned out to be a fellow Fourth Fighter Group red-nosed P-51! Untrained on the gyro sight, I missed him of course. Thank God!

Big shoes to fill

Here I was, part of the elite Fourth Fighter Group that contained so many noteworthy pilots like Don Blakeslee, Deacon Hiveley, Pierce McKennon, Louis Norley, James Goodson, and countless others. And yet the way I had flown in combat that day made me worry that the rest of the fellows would think the Germans sent me here — especially after shooting at one of our own! I was told it was natural and with a few more missions under my belt, the “jitters” would go away.

And for the most part they did, except on one mission when things went spiraling out of control. Most of our missions were bomber escort. Loaded up fuel and ammo, the Mustang at times was a real handful until you burned some of the internal gas off. I learned this the hard way during my fighter pilot schooling as I formed up with my wingman on another bomber escort to Germany. I was fully loaded with papier mâché drop tanks under each wing. During climbout, my engine began to cut in and out. I tried to stay with the other Mustangs beside me, but my engine would not respond to my inputs. Suddenly, the engine just up and quit. For a second, I felt as if the P-51



Col. Don J. M. Blakeslee, 14.5 kill ace and CO of the 4th FG, stands by his P-51D Mustang at Debden Airfield during August 1944. (Photo courtesy of Jack Cook)

just hung there in the sky, as I helplessly watched my fellow Mustangs accelerate away.

I got the Merlin restarted and applied boost to catch up. Problem was, I put way too much boost in as my closure rate on the bomber formation was faster than I wanted it to be. I began turning the P-51 from side to side in attempts to slow down. With all that extra weight from the drop tanks and my internal fuel, the Mustang became hard to control. I tried S-turns back and forth and went into a high-speed stall. I was behind the curve again and didn't expect it. As I lost my lift, I immediately started to spin with my drop tanks still attached.

The golden rule was that if you were in a spin

Ken inside his Mustang being readied for combat by his ground crew. (Photo courtesy of author)





with drop tanks, you were to release them before you over-stress the airframe. As the ground rushed up at me I forgot all about the rule as I fought to control my spinning mount. There was no way I was going to abort this mission. If I punched the tanks off now, I would have to head back home and I was not a quitter! I somehow managed to break out of the spin with my tanks still attached and rejoined the formation. If I was going to survive this war I needed to focus on the tasks at hand, or I needed one "helluva good luck charm!"

Georgie Boy

My good luck charm came in the form of a letter from home. I came from a family of patriotic beliefs and moral obligations. My brother Don was stationed in the Philippines and my sister Rose was a WAC in Michigan. My mother, who was widowed when I was a young boy, was left home alone while her children fought abroad. Enclosed in the letter from my mother was a picture of a little six-year-old neighbor boy named Georgie Armstrong. Georgie used to tag along with me and the older boys in the neighborhood back in Madison, Wisconsin. Although he was quite a bit younger than we were, we tolerated his presence. My mother informed me that since last spring, when I along with most of the guys from the block were in the service, Georgie would help her around the house, doing the dishes, raking leaves, sweeping the front porch and other odd jobs. After months of constant help from Georgie, my mother finally asked him why he was helping her. Georgie answered very matter-of-factly, "Somebody's got to take care of you now that the big boys are gone." That practically tore my heart out. I also became focused on the task at hand.

Due to combat losses and men finishing their tour, the turnover rate was quite rapid in the 4th FG. Therefore I was issued my own P-51D. With its prominent red nose out front and its bubble-top canopy, it was a sight to behold. It just seemed to be missing something. Some of the other fellows had bathing beauties and pinup girls painted on their aircraft, while others had cartoon characters, wives or girlfriend's names and an assortment of other artwork. Not wanting to be left out, I begged

our "ace painter" Staff Sgt. Don Allen, the best in the ETO, to paint the nose of my plane. I showed Don the picture of Georgie and where I wanted his name placed and pointed out where I wanted his face to be.

After it was all said and done, I stood back and marveled at the sight before me. The face looked just like the photo accompanied by his name in large red letters. "Georgie" and I were destined to

4th FG Mustang *Georgie* flown by Ken Helfrecht

THE FACE LOOKED JUST LIKE THE PHOTO ACCOMPANIED BY HIS NAME IN LARGE RED LETTERS. "GEORGIE" AND I WERE DESTINED TO DO GREAT THINGS.

do great things. There was a lot of snickering and laughter from some of the other pilots. "A little boy's face on a fighter plane!" "Don't you have a girl back home!" The laughter stopped after they read my letter and it was replaced with pats on the back.

The only person who had some concerns over the nose art was my crew chief, Sgt. Robert Lewis. Not because he didn't like it. Actually he thought it brought good luck to "his" plane. His concern was that the face was painted too close to the

Ken and crew chief, Sgt. Robert Lewis admire *Georgie* nose art. (Photo courtesy of author)





Above: First Lt. Darwin Berry of the 335th FS is ready for takeoff on a combat mission during early July 1944 from Debden, A/F, England. Berry is flying P-51D s/n 44-13641 WD+A which was lost on a takeoff crash on July 22, 1944, killing the pilot. (Photo courtesy of Jack Cook)
Below: Major "Red Dog" Norley pins the DFC on after a late war attack on a German airfield. (Photo courtesy of author)

exhaust stacks and keeping Georgie's face clean was no easy job! He even made me write a letter to Georgie's mom explaining the fact that "Sgt. Lewis has more trouble keeping Georgie's face clean than you do!" I also wrote a letter to Georgie and said, "Your gift to my mother is just another reminder of all the good deeds you have done for me. You can't realize how much strength your little heart gives my mother and I."

Targets of opportunity

As the war progressed into 1945, Georgie's face became a lot dirtier. Less and less German opposition was encountered on our bomber

two-thirds of the way down the fuselage, pumping the Mustang's life-blood of glycol, one little nick could put you out of the game. There were airfields I over flew that had the German wonder weapon Me 262 jets parked wing tip to wing tip but the flak was so intense we never got close to them. It didn't matter, though, because by that time the Germans were out of fuel and pilots.

April 16, 1945. One airfield I really became "close" with was Gamblingen Airdrome in Germany. Our group that day was led by Major Louis "Red Dog" Norley on a target withdrawal support/strafing mission. After we were released from the bombers, Major Norley led us down on the deck looking for targets. Gamblingen Airfield was packed full of aircraft as we made our first pass. Flak was light and suppressed quickly. A racetrack pattern was set up as Mustang after Mustang made gun runs across the aerodrome, shooting and annihilating everything in sight.

My "trusty old" gunsight worked flawlessly as I made repeated runs over the airfield. Burning German aircraft were everywhere as my .50 caliber rounds found their mark. My sight was filled with targets that day as I beat up Gamlingen. After it was all said and done, I set five German aircraft on fire; two Me 410s, two Fw 190s and one He-177 were destroyed. All told for that day, our flight of 16 Mustangs destroyed 44 German aircraft without a single loss.

Back at Debden I received the DFC from Major Norley for my actions that day. Georgie and I really made a good team as we helped shorten the war in our own little way. With the war finally over in Europe and abroad, I eventually rotated home. After all, Georgie was entitled to some well-deserved R and R now that the big boys were back home! ✈



escort missions. With are ammo bays stuffed full of rounds, we were released from our escort duties to go down and sweep the area looking for targets of opportunity. Georgie and I shot up trucks, trains, canal barges and anything else that moved. We also shot up German airfields that were heavily defended by anti-aircraft fire. When I saw flak it scared the daylights out of me especially when it came spiraling up at us. I really liked flying the P-51D but I never liked using it as a strafers. With those coolant lines running

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The XC-99 didn't quite blot out the sun when it flew over a city — but almost. Even more impressive than its sheer size was the surprising fact that this behemoth was a real, working airplane, carrying out a military heavy hauling mission day after day, year after year. This official air-to-air image came from George W. McCune, a civilian flight engineer who was part of the plane's crew. (Photo courtesy of Robert F. Dorr collection)



A Tale of the Times

We'll lose the XC-99 and it won't be alone

BY ROBERT F. DORR PHOTOS COURTESY OF ROBERT F. DORR COLLECTION

Big, historic airplanes could be the aeronautical definition of “conundrum” for museum people. No one wants to see a truly historic airplane, such as the XC-99 disintegrate into powdery oxide while in outside storage. However, the realities of space and financing determine the prioritization for every museum of any size: some aircraft are just not likely to be saved. The tale of the XC-99 is long and arduous and, unfortunately, typical of what faces many, big airplanes.

The term “magnesium overcast” seems to fit the XC-99, the colossal, one-of-a-kind cargo version of the B-36 bomber.

The six-engined, 265,000-pound XC-99 made extensive use of the tricky, flammable metal. It was big enough, with its 230-foot wingspan, to come close to blotting out the sun.

Today, efforts to preserve and display the XC-99 appear to be at a hiatus.

At the request of *Flight Journal*, retired Lieutenant General Jack Hudson, director of the National Museum of the United States Air Force in Dayton, Ohio, issued this statement:

“The staff of the NMUSAF has determined that our current restoration and exhibit resources and manpower must be re-directed and focused to meet our critical near term requirements of enhancing current public galleries, such as Cold War, as well as preparing for our new fourth building and its four additional galleries. These near term requirements, along with the budget and manpower reductions, will not allow for the needed care, attention, and restoration of the XC-99 in the foreseeable future.”

The mortal remains of the XC-99, moved from San Antonio, Texas, to Dayton at huge difficulty a decade ago, are being moved again to the boneyard in Arizona. The villain: the federal budget squeeze.

XC-99 upbringing

Designed in 1942, the XC-99 had a spacious, double-deck interior designed to carry 400 combat troops or 101,000 pounds of cargo. The XC-99 was powered by six 28-cylinder Pratt & Whitney R-4360-35 radial engines rated at 3,000hp each. It

was the largest aircraft in the world in the 1950s and remains the largest propeller-driven aircraft ever built.

Testing began on November 23, 1947. The XC-99 entered service two years later. It was stationed from 1949 to 1957 at Kelly Air Force Base, Texas. In 1951 and 1952, the plane carried seven million pounds of equipment and supplies supporting the Korean War effort.

As a teenager, I had a memorable tour of the XC-99 when it visited Bolling Air Force Base in Washington, DC in May 1954.

The tabloid *Washington Daily News* published an air-to-air, black and white photo of the XC-99 arriving for the Armed Forces Day show at Bolling. Visible in the photo were Fort McNair and Bolling, with its busy runways and ramp, as well as the engine nacelle of the TB-25N Mitchell carrying the photographer. I wrote to the paper requesting an 8 by 10 print. The *Daily News* wrote back and said I'd have to send them a dollar. I did. The paper went out of business soon afterward so mine may be the only copy of this portrait of a flying behemoth.

People gawked whenever the XC-99 appeared at an air show. At one event, when it was still an operational aircraft, a woman asked pilot Captain Jim C. Douglas, "How will you move this thing from here?"

Douglas replied, "We fly it, lady."

The woman retorted, "Young man, what kind of a fool do you take me for?"

By 1957, the condition of the six-engined XC-99 was such that \$1 million in immediate maintenance would have been needed to keep it aloft. The big plane was always difficult to load, lacking the "roll on, roll off" capability of today's airlifters. Repairs were deemed uneconomical. The Air Force withdrew the plane from service.

BY 1957, THE CONDITION OF THE SIX-ENGINED XC-99 WAS SUCH THAT \$1 MILLION IN IMMEDIATE MAINTENANCE WOULD HAVE BEEN NEEDED TO KEEP IT ALOFT. THE BIG PLANE WAS ALWAYS DIFFICULT TO LOAD, LACKING THE "ROLL ON, ROLL OFF" CAPABILITY OF TODAY'S AIRLIFTERS, REPAIRS WERE DEEMED UNECONOMICAL.

Thereafter, the XC-99 had several owners until 1993 when the Kelly Heritage Foundation acquired it and towed it back onto the base. "We were about to renovate the XC-99 when Kelly was placed on the closure list by the 1995 Defense Base Closure and Realignment Commission," said Duane Simpkins of the foundation in a 1998 interview. The foundation has not updated its web site for several years and did not respond to an *FJ* inquiry. Also in 1998, retired Major General Charles Metcalf, then director of the Air Force Museum (now the NMUSAF) told me he hoped the XC-99 could be saved but was "pretty pessimistic."

The condition of the aircraft had deteriorated badly, in part because magnesium does not hold up under the elements.

That year, some of the XC-99 was in the museum's restoration hangar, but most of it was in San Antonio awaiting movement. Museum spokesman Robert J. Bardua said restorers had the leading and trailing edges of the wings, wingtips, horizontal and vertical stabilizers, flight controls, tail section, engines and propellers. The rest would come later, Bardua said.

The traveling XC-99

Among XC-99 buffs, two myths have taken hold. The first is that the Air Force missed an opportunity to fly the plane to its museum in Dayton in 1957 for the price of fuel. The second myth is that, today, nobody in the Air Force cares. A flight to Dayton was nixed in 1957 because the cost of mak-

This is the XC-99 on November 25, 1950. Perhaps a reader will recognize the location. In later years, the XC-99 featured a weather radar in a thimble-shaped protrusion at the nose centerline. Still later, a portion of the fuselage was painted white on top to reduce the temperature inside the cargo area.





Captured by a *Washington Daily News* photographer whose name we can no longer find, the XC-99 arrives in Washington for the May 1954 Armed Forces Day show. The Washington Monument is just ahead of the plane's nose. Beneath are Fort Lesley J. McNair on one side of the Anacostia River and Bolling Air Force Base — then an active airfield and host to the show on the other.

ing the XC-99 airworthy for a one-time trip was prohibitive. Many with an interest in the aircraft worked to save it. I published an opinion piece in the trade journal *Air Force Times* in 1998. With enormous effort and expenditure, the XC-99 — in derelict condition — travelled by land from San Antonio to Dayton. Efforts to restore it moved in fits and starts.

It was always a challenge, in both technical and fiscal terms, The April 3 statement — gotten for us by Bardua, who is on the job 16 years later— confirms that this is the wrong budgetary era for a challenge of this magnitude.

Curiously, no one seems to have considered an obvious alternative — the Air Mobility Command Museum at Dover Air Force Base, Delaware. When I visited Dover recently, AMC Museum director Mike Leister had not heard that plans to restore the XC-99 in Dayton had been dropped.

A far-out prospect

Leister told me his museum would face the same challenges as the NMUSAF. He does not have funds to move the XC-99 from Dayton to Dover and would want to be better informed before working with magnesium. But Leister said he has the space, the expertise, and the volunteers to restore the XC-99. He and his staff restore large aircraft constantly. They currently display the only C-5 Galaxy on exhibit for the general public.

To me, the situation is déjà vu. I had a small role in preventing the XC-99 from rotting in San Antonio. By all accounts,

BY ALL ACCOUNTS, IT IS TOO LATE NOW TO PREVENT IT FROM BEING PLACED IN STORAGE IN ARIZONA. AS A LONGTIME SUPPORTER OF THE AMC MUSEUM IN DOVER, I WOULD LOVE IT IF THE XC-99 COULD BE MOVED THERE, BUT GRIM REALISM TELLS ME IT ISN'T GOING TO HAPPEN.

it is too late now to prevent it from being placed in storage in Arizona. As a longtime supporter of the AMC Museum in Dover, I would love it if the XC-99 could be moved there, but grim realism tells me it isn't going to happen.

The NMUSAF statement concludes: "As this aircraft is important to the NMUSAF collection and we do have concerns regarding its continued storage in the harsh Ohio climate. [Moving the aircraft to Arizona] will provide the best possible security and storage conditions until such time as final long term plans might be completed."

It's impossible not to think of other examples of heavy iron that should have been preserved but weren't — the Junkers Ju 290 scrapped at Wright Field in 1947 (captured after World War II and brought here), the Lockheed R6O-1 Constitution (two built) and the Douglas C-74 Globemaster (14 built).

These aircraft would make eye-watering, educational displays and we've lost all of them. The combination of lack of interest, costs, and space worked against them. It's a process that repeats itself entirely too often.

The jury is still out on the XC-99, but all signs suggest we'll lose it too. ✚

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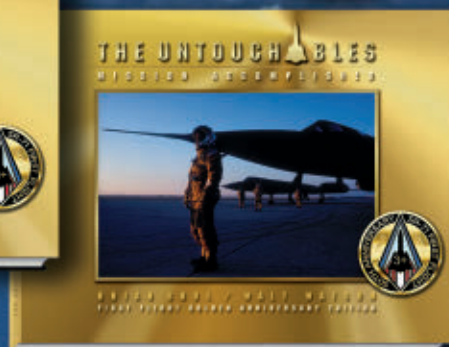
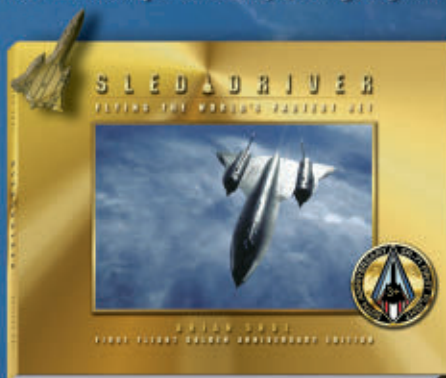
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IF THE
WRIGHT
BROTHERS
HAD BEEN
WRONG ...

It would have been a different 20th century

BY WALTER BOYNE



September 1, 1939 The 16 Morane Saulnier MS 275s crossed the border, heading for the German Air Force Base at Sennheim. Twenty minutes later, the flight commander signaled and the parasol wing fighters dived, their 600hp Gnome Rhone radials roaring. At 400 feet and almost 180mph, each plane's two 7.7mm machine guns fired at their targets, 12 Junkers Dornier Do 11 bombers, each one maxed out with a one ton load of bombs. Crew could be seen jumping out of the open front gunner's positions.

Wait just a second. Let's see what's wrong here. French Morane's attacking Do 11s in 1939? Seems odd – but that's what might have happened if the two well-intended young Daytonians had not screwed the world up entirely by succeeding in their quest to fly on December 17, 1903.



The image of the Wright's successful flight is well known. Less well known are their crashes, including the loss of Lt. Selfridge, the first passenger fatality. If this had happened in December 1903, would the Wrights have carried on with their work? Interesting question.

Putting the blame

It is an often overlooked fact that on that cold, 17-knot wind day, Orville and Wilbur Wright's success set in motion advances in aviation that caused an avalanche of disasters, including 90,000,000 casualties during the 20th century. They further were the indirect — but indispensable — cause of the defeat of the Central Powers in World War I that resulted in the rise of Communism, Nazism, Fascism, World War II, and the Cold War.

All this would be absurd if it were not demonstrably true. Had Orville failed on that fateful December 17, and the Wright Brothers quit their experiments, World War I would almost certainly have ended differently by late 1914 or early 1915. Germany and its allies (the Austro-Hungarian and Ottoman Empires and Bulgaria) would have triumphed over the Entente Cordiale, (initially France, Great Britain, and Russia.)

Germany was generally acknowledged to have the world's best army. Its victory would have resulted from the execution of the famed Schlieffen Plan. In this now notorious scheme, Germany would sweep through Belgium to capture Paris swiftly. The French would be defeated in a mere six weeks. Then, using their magnificent rail sys-

tem, the German Army would have been switched back to the East to confront and defeat Russia.

And save for three extraordinary surprises, that is exactly what would have happened.

ed itself as the natural father of flight. There the original claims of the Wrights were dismissed as lies, another example of American braggadocio. French aviators did not believe that these two untutored hayseeds from Dayton could accomplish sustained, controlled flight. Even after 1905, when it was possible to see the Wrights actually flying, the Europeans maintained their disbelief. It was not until Wilbur's brilliant demonstrations in Europe in 1908 and 1909 where European attitudes changed. The change was radical, inspiring competition at a level far beyond even that found in the United States, where Glenn Curtiss was building airplanes and contesting the Wright patent with equal effort.

Patents, shmatents

France, having given birth to the balloon, regard-

THE QUESTION IMMEDIATELY ARISES AS TO HOW ONE CAN BLAME THE 180 SWITCH IN THE OUTCOME THE WRIGHTS. THE ANSWER LIES IN THE TOTALLY FALSE BELIEF OF THE WRIGHT BROTHERS THAT

tem, the German Army would have been switched back to the East to confront and defeat Russia.

And save for three extraordinary surprises, that is exactly what would have happened.

Surprise, surprise, surprise

The first surprise was Great Britain elected to honor its 1839 agreement to protect Belgium. The second surprise was that primitive reconnaissance planes, none capable of more than 70mph and perhaps 90 minutes flying time, would detect and report the movement of German forces. And the third, and by far the most surprising, was that both the British and the French high commands would accept the reports from the gallant young officers flying reconnaissance, and would act upon them.

Thus it was on August 30, 1914, the German General Alexander von Kluck began to exploit what he believed to be an improvement on the Schlieffen plan. The Belgians had been forced to surrender, and his First Army was marching south through a sudden gap in the British/French lines, intent on a swift shift to left that would capture Paris and end the first, critical phase of the war.

But Gen. Kluck had not counted on the flying skills and visual acuity of the British officers who observed the German army's position. They noted a gap between Kluck and his counterpart, Gen. Karl von Bülow's Second Army. Then they had the gall to land near headquarters and demand

In 1909, the Wrights finally achieved their longtime goal of selling an airplane to the military, when the U.S. Army purchased the Wright Military Flyer. (It can be seen today at the National Air and Space Museum.) Captain Benjamin Foulois was directed to teach himself to fly the airplane. The Army persisted in its indifferent mode for the next several years. It saw aviation as a dangerous hobby of interest only to those officers rash enough not to fear death or career damage.

Despite the Wright Brothers' persistent failure to sell abroad, they remained confident, knowing that they were at least a decade ahead of any competitors. And they were correct. Had the Wrights



An assumption could be made that if the first fight had happened a decade later, military aviation "might" have progressed to the level of the 1932 Dornier Do 11 medium bomber by the time WWI started in 1939.

OF WORLD WAR I, WITH ALL THE RESULTANT SUBSEQUENT TROUBLES, ON THE SUCCESS OF THEIR PATENT ON THE FLIGHT CONTROLS OF AIRCRAFT WOULD BE HONORED BY COMPETITORS.



A major aeronautical force in the 1920s and early '30s, France's Morane-Saulnier's trademark in its initial fighter development was the strut-braced parasol monoplane, such as the MS.275. (Photos courtesy of the EN Archive Collection)

Putting the blame

It is an often overlooked fact that on that cold, 17-knot wind day, Orville and Wilbur Wright's success set in motion advances in aviation that caused an avalanche of disasters, including 90,000,000 casualties during the 20th century. They further were the indirect — but indispensable — cause of the defeat of the Central Powers in World War I that resulted in the rise of Communism, Nazism, Fascism, World War II, and the Cold War.

All this would be absurd if it were not demonstrably true. Had Orville failed on that fateful December 17, and the Wright Brothers quit their experiments, World War I would almost certainly have ended differently by late 1914 or early 1915. Germany and its allies (the Austro-Hungarian and Ottoman Empires and Bulgaria) would have triumphed over the Entente Cordiale, (initially France, Great Britain, and Russia.)

Germany was generally acknowledged to have the world's best army. Its victory would have resulted from the execution of the famed Schlieffen Plan. In this now notorious scheme, Germany would sweep through Belgium to capture Paris swiftly. The French would be defeated in a mere six weeks. Then, using their magnificent rail sys-

tem, the German Army would have been switched back to the East to confront and defeat Russia.

And save for three extraordinary surprises, that is exactly what would have happened.

ed itself as the natural father of flight. There the original claims of the Wrights were dismissed as lies, another example of American braggadocio. French aviators did not believe that these two untutored hayseeds from Dayton could accomplish sustained, controlled flight. Even after 1905, when it was possible to see the Wrights actually flying, the Europeans maintained their disbelief. It was not until Wilbur's brilliant demonstrations in Europe in 1908 and 1909 where European attitudes changed. The change was radical, inspiring competition at a level far beyond even that found in the United States, where Glenn Curtiss was building airplanes and contesting the Wright patent with equal effort.

Patents, shmatents

France, having given birth to the balloon, regard-

In 1909, the Wrights finally achieved their longtime goal of selling an airplane to the military, when the U.S. Army purchased the Wright Military Flyer. (It can be seen today at the National Air and Space Museum.) Captain Benjamin Foulois was directed to teach himself to fly the airplane. The Army persisted in its indifferent mode for the next several years. It saw aviation as a dangerous hobby of interest only to those officers rash enough not to fear death or career damage.

Despite the Wright Brothers' persistent failure to sell abroad, they remained confident, knowing that they were at least a decade ahead of any competitors. And they were correct. Had the Wrights

THE QUESTION IMMEDIATELY ARISES AS TO HOW ONE CAN BLAME THE 180 SWITCH IN THE OUTCOME THE WRIGHTS. THE ANSWER LIES IN THE TOTALLY FALSE BELIEF OF THE WRIGHT BROTHERS THAT

tem, the German Army would have been switched back to the East to confront and defeat Russia.

And save for three extraordinary surprises, that is exactly what would have happened.

Surprise, surprise, surprise

The first surprise was Great Britain elected to honor its 1839 agreement to protect Belgium. The second surprise was that primitive reconnaissance planes, none capable of more than 70mph and perhaps 90 minutes flying time, would detect and report the movement of German forces. And the third, and by far the most surprising, was that both the British and the French high commands would accept the reports from the gallant young officers flying reconnaissance, and would act upon them.

Thus it was on August 30, 1914, the German General Alexander von Kluck began to exploit what he believed to be an improvement on the Schlieffen plan. The Belgians had been forced to surrender, and his First Army was marching south through a sudden gap in the British/French lines, intent on a swift shift to left that would capture Paris and end the first, critical phase of the war.

But Gen. Kluck had not counted on the flying skills and visual acuity of the British officers who observed the German army's position. They noted a gap between Kluck and his counterpart, Gen. Karl von Bülow's Second Army. Then they had the gall to land near headquarters and demand



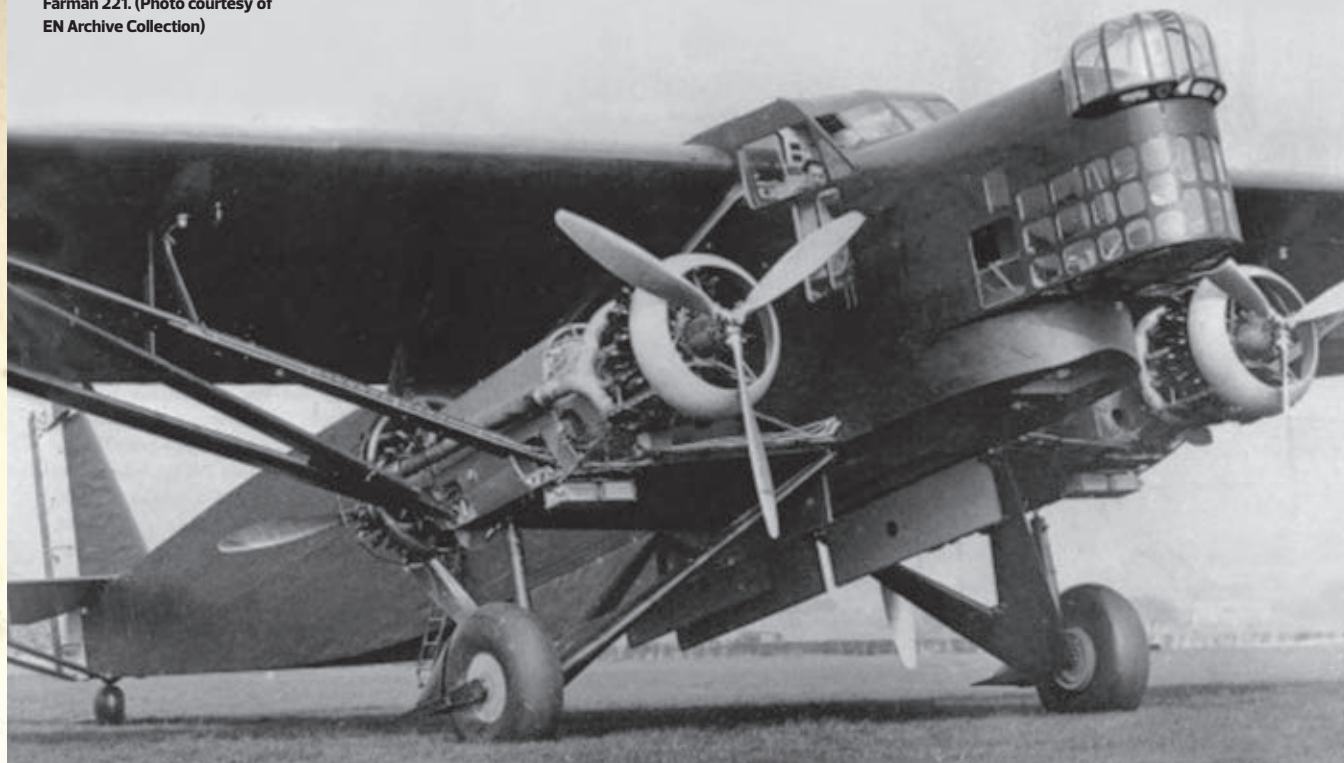
An assumption could be made that if the first fight had happened a decade later, military aviation "might" have progressed to the level of the 1932 Dornier Do 11 medium bomber by the time WWI started in 1939.

OF WORLD WAR I, WITH ALL THE RESULTANT SUBSEQUENT TROUBLES, ON THE SUCCESS OF THEIR PATENT ON THE FLIGHT CONTROLS OF AIRCRAFT WOULD BE HONORED BY COMPETITORS.



A major aeronautical force in the 1920s and early '30s, France's Morane-Saulnier's trademark in its initial fighter development was the strut-braced parasol monoplane, such as the MS.275. (Photos courtesy of the EN Archive Collection)

Not to be left behind in early 1930s bomber development, Farman developed its four engine (one behind the other) Farman 221. (Photo courtesy of EN Archive Collection)



**IT IS FAIR TO SAY THAT THE PRESSURES OF WAR AND THE GENIUS OF THE INDUSTRY
ACHIEVED MORE IN THOSE FOUR BLOODY YEARS THAN WOULD HAVE BEEN ACHIEVED
IN TWENTY YEARS OF PEACE.**



Building on the wildly escalated aeronautical progress spurred by WW I, most manufacturers were caught up in air racing, vying for the title "fastest airplane in the world." Curtiss was one of those and their P-1 was the first Aircraft to carry the "P" for Pursuit, designation. This was 1923 and is likely what the U.S. may have been building by 1939. (Photo courtesy of Joe Gertler)

failed, the French would have continued following the flawed efforts of Captain Ferber and Henri Farman, while the Germans would have been looking for another Lilienthal. Great Britain, despite the great contributions of Sir George Cayley, would have remained above the fray, content to be mistress of the seas.

But the Wrights succeeded, and in doing so, splashed gasoline on the European flames of flight, inspiring Gabriel Voison, Louis Bleriot, and many others. None of the European pioneers had any inhibition about stealing the Wright's ideas on controlling an aircraft, and all were ready to push ahead with the manufacture of engines and airframes. The Wrights' naiveté put them so far from reality that only a last minute business agreement in Germany salvaged them any financial reward for their genius.

Flight — a cultural plus

There were also social differences. After 1908, aviation was suddenly fashionable in Europe, adopted as a sport by aristocratic men of wealth in many nations. As a result, it had sponsors at very high levels in government who were able to funnel resources to it. The foreign military leaders saw that the airplane at last offered a means of viewing "the other side of the hill" in a way that balloons could not.

Thus, after the assassination of Archduke Franz Ferdinand and his wife on June 28, 1914, led to war in Europe, it happened that every major nation possessed an air force. Great Britain had about 150 aircraft in military service, France had 160, Germany had 246 and Russia had about 150. Austria-Hungary had ten balloons and perhaps fifty aircraft. (The United States Army's Aviation Section Signal Corps had 22, but few were flyable.)

Less obvious, but even more important, the major combatants had already begun to forge an industry that would explode in size over the next four years of bloody conflict. Up to the outbreak of war, only about 3,000 aircraft, not all of which were capable of flight, had been built in the entire world. By 1918, more than 225,000 aircraft were built, all of vastly improved performance. It is fair to say that the pressures of war and the genius of the industry achieved more in those four bloody years than would have been achieved in twenty years of peace.

The critical report

As laggard as Great Britain had been in preparing for, or even in avoiding war, it went into action promptly after declaring war on August 4. The

tiny Royal Flying Corps flew 45 aircraft across the Channel from Dover to Amiens, with 24 more coming in crates. The first reconnaissance flights were made on August 19th.

On 22 August 1914, British Captain (later Air Commodore) Lionel Evelyn Oswald Charlton and Lieutenant Vivian Hugh Nicholas Wadham (KIA, 1916) were flying in a Royal Aircraft Factory B.E.2c, powered by a 70-horsepower Renault engine. They observed that the German army preparing to surround the British Expeditionary Force. They took their observations directly to Sir John French, the British commander, who believed them, and began a withdrawal that saved an estimated 100,000 soldiers. Lord French



passed the intelligence on to his French army counterpart, who reluctantly agreed to the decision to retreat. Lord French then deployed two infantry corps across a 25-mile front near Mons. They held the Germans off for critical 24 hours, and then began an eight-day fighting retreat, which led to the total disruption of the German Schlieffen plan — and with it the outcome of World War I.

Engineering versus manufacturing

Viewed another way, the extraordinary acceleration of design, development, deployment and use of aircraft from 1914 to 1918 is a salute to the enthusiasm and the capabilities of the engineers, and perhaps more importantly, the craftsmen of the era. In 1914, the mass production of automobiles in the United States had been established for about a decade, beginning with Olds in 1901, and then, on a grander scale, with Ford in 1913. France had been involved in mass production even earlier, with Panhard and Peugeot, before the turn of the century.

England's Handley-Page Heyford heavy bomber of 1930 was unique in many ways, including its separate lower wing which housed the bomb bay in its center section. A "dust bin" retractable gun turret could be lowered from the rear fuselage — state of the art at the time. (Photo courtesy of EN Archive Collection)



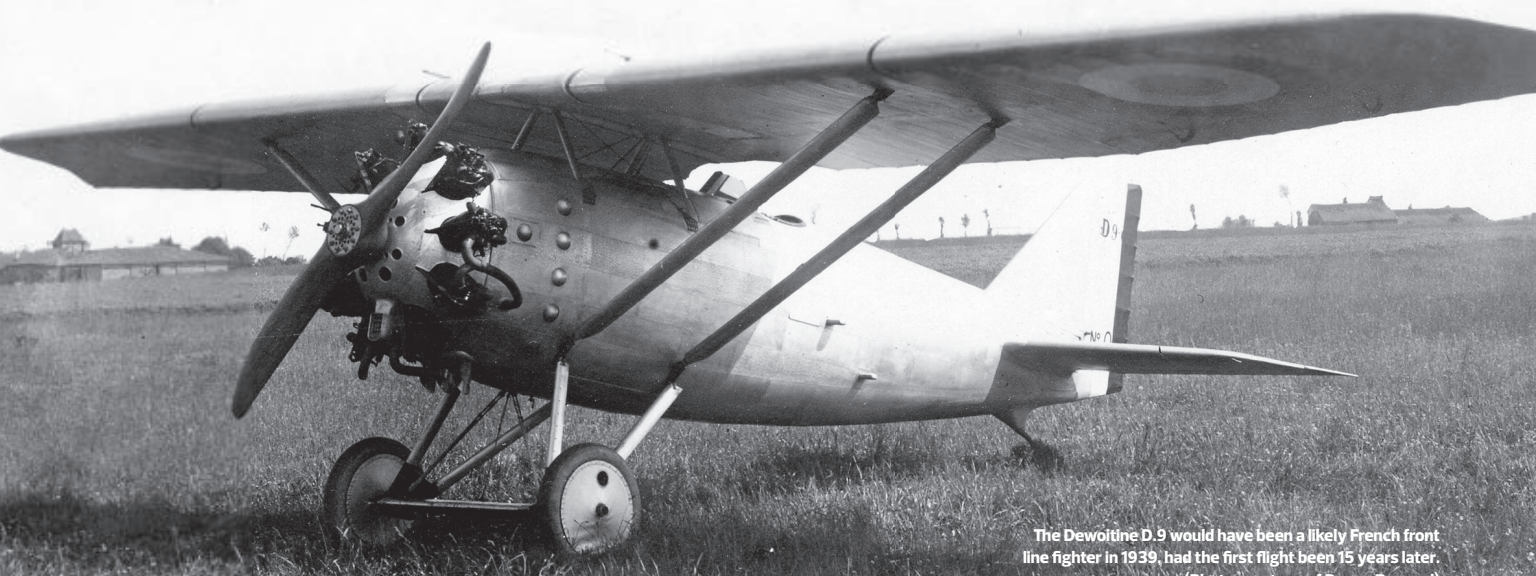
The Fairey Fantome from England was a prototype fighter that flew only a year before the Spitfire, an example of different concepts coming to the fore. (Photo courtesy of EN Archive Collection)



Above: Germany's Heinkel He 59, a 1931 design, could easily have been a Luftwaffe mainstay with a 10-year delay in aircraft development. (Photo courtesy of Denes Bernard)



Left: The 1931 U.S. Keystone bomber might have been the primary bomber during WW II. (Photo courtesy of Joe Gertler)



The Dewoitine D.9 would have been a likely French front line fighter in 1939, had the first flight been 15 years later. (Photo courtesy of Denes Bernard)

But there was a vast difference in the two concepts of mass production. The French concept meant buying similar parts for installation in a standard design. Those “similar parts” were not themselves standardized and interchangeable. The American concept meant the standardization and interchangeability of all parts so that any sub-assembly could be fit or repaired with an exact replica. The French concept still involved the solution of fit and interchangeability problems by the skilled hands of a craftsman. In terms of initial volume of production, there was not a great difference, but in terms of field service, of maintainability and replacement there was an enormous difference.

At the time, the problems caused by this major difference were simply overridden by the overwhelming needs of the air forces of World War I. Wastage was enormous, for aircraft were destroyed almost at the same rate — and sometimes exceeding the same rate — at which they were delivered. As a result, industry was forced to improve its methods even as it improved its product.

German and Austro-Hungarian Armies.

Fortunately for the world, Queen Victoria had bequeathed an incestuous network of Kings and Emperor’s (“Willi” in Germany, “Georgie” in Great Britain, “Nikki” in Russia and “Franzi” in Austro-Hungaria). These cousins, often visiting and being photographed as friends, had little to fight about once the French Revanchist movement had been settled. A virtual 1915 version of the European Union would have been established, *de facto* if not *de jure*. The political consequences would have been enormous, for Willi would never have allowed the Communists to depose Nikki. Instead, Stalin, Trotsky, Lenin, the entire lot, would have been captured and shot or sent to an Imperial Russian labor camp for life.

Without Communism as his *bête noire*, and without a demand of revenge for defeat (hard to do, since Germany had won) Hitler would have no ideological basis for a political party, and Nazism would never have emerged. I like to think of him becoming a combination of a successful artist selling water colors while operating equally

WASTAGE WAS ENORMOUS, FOR AIRCRAFT WERE DESTROYED ALMOST AT THE SAME RATE – AND SOMETIMES EXCEEDING THE SAME RATE – AT WHICH THEY WERE DELIVERED. AS A RESULT, INDUSTRY WAS FORCED TO IMPROVE ITS METHODS EVEN AS IT IMPROVED ITS PRODUCT.

Engines are the simplest examples of the effect of World War I, and the most obvious way to explain what might have happened if the pressures of that war had not existed. The Renault engine began the war with 25hp V-4 and ended it with a much larger (and crankier) V-12. Mercedes began with a 100hp in-line six, and ended with an upgraded version of 185hp. Henry Royce of Rolls-Royce devised a 200hp engine by 1915, drawing features from both Renault and Mercedes. His Condor of 1917 boasted 500 horsepower.

Without the impetus of the needs of World War I, none of these advances would have occurred, not because of any lack of engineering capability, but because the political situation would not have called for it. There never would have been the revolution in manufacturing techniques and engineering vision as occurred between 1914 and 1918, except perhaps in America. And there the frugal Congress of the time would never have provided the necessary funds for real advances.

The outcome reversed — the Kaiser wins

Politics thus controlled engineering progress. If the deliberate results from early aerial reconnaissance had not occurred, it is almost certain that the Imperial German would have conquered France (again). And because of German aerial reconnaissance, the Imperial Russian Army was defeated at Tannenberg and was subsequently defeated in the field by the combined efforts of the

well on the side as a serial killer.

Mussolini would probably have emerged as a small time political leader, famous for histrionics and a jaw, but never in a position to abuse and be defeated by small countries.

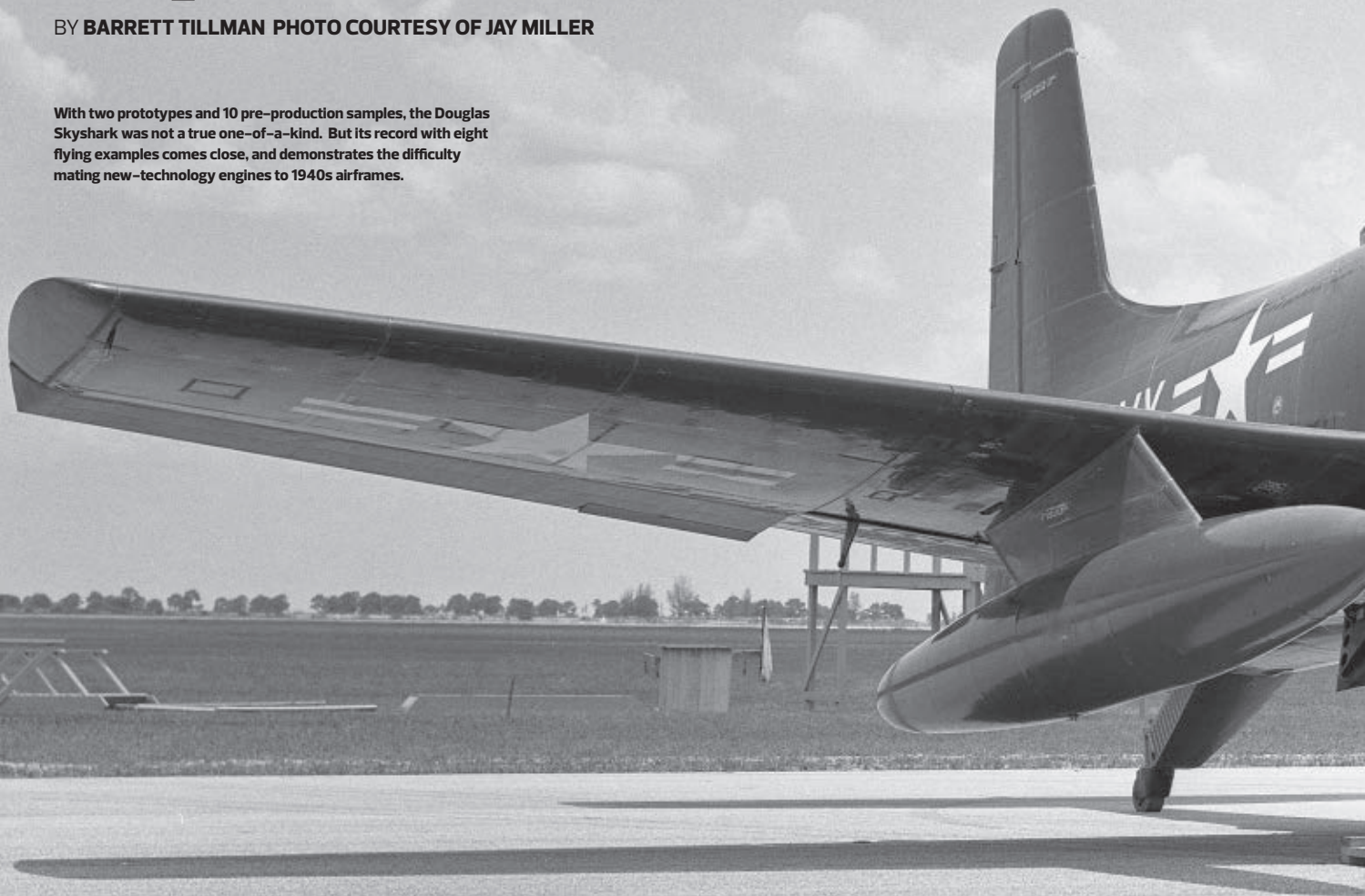
In the airplane world, the year 1939 might have seen some records broken — the first circumnavigation of the world by something similar to the Douglas World Cruiser. The world’s speed record might have gone all the way to 280mph, if Al Williams had been given an updated Curtiss R3C2. Passenger travel would still be slow and uncomfortable (not as bad as today, however) with the introduction of a Ford Tri-motor. In private flying, the country would have been offered the opportunity to learn by the Pietenpol Camper and the Heath home-built, but Cessna, Piper, and Aeronca would not yet be viable.

In terms of conflict, the initial premise of Morane MS 275s attacking Dornier Do 11s is actually far too optimistic. Should France have tried (for the third time in 58 years) to fight the Germans in 1939, the aircraft involved would probably have been more like the 1925 Dewotone D 1s against Heinkel He 59s. The reason, of course, is that without the advances of 1914-1918, aircraft manufacture would have been one to two decades behind. It is perhaps excessive to say, “Curse you, Wilbur and Orville,” for their intent was good — only their results, in the hands of ordinary men, caused the unremitting disasters of airpower in the 20th century. †

Ground-Pounding Monster: Douglas A2D Skyshark

BY **BARRETT TILLMAN** PHOTO COURTESY OF JAY MILLER

With two prototypes and 10 pre-production samples, the Douglas Skyshark was not a true one-of-a-kind. But its record with eight flying examples comes close, and demonstrates the difficulty mating new-technology engines to 1940s airframes.



In late June 1945, less than two months before Japan surrendered, the U.S. Navy asked Douglas for a proposal leading to a turbo-prop attack aircraft. Since the El Segundo firm had produced the world-historic SBD Dauntless dive-bomber, chief engineer Edward H. Heinemann was the go-to designer.

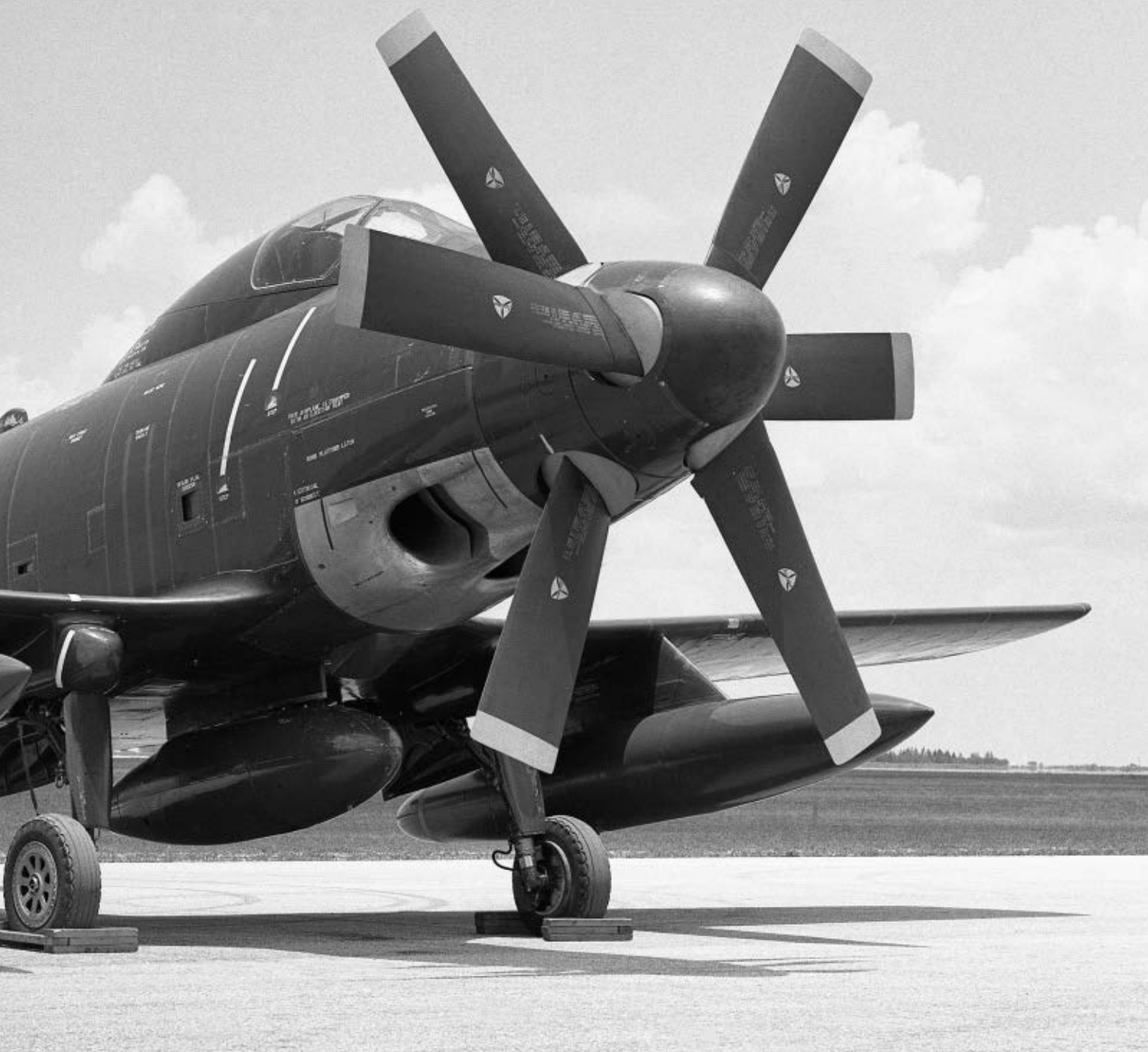
The navy wanted more punch from escort carriers, hence the concept of a powerful turboprop aircraft to lift heavy ordnance loads without jet assist. Consequently, the Skyshark was powered by Allison's XT-40-A2, producing a massive 5,100 horsepower. To make optimum use of the available power, Douglas decided upon two three-bladed contra-rotating propellers.

Allison lagged in developing the T-40, prompting the Navy to

consider replacing it with Pratt & Whitney's T-34. But no contra-rotating props or a gearbox had been developed so the Navy and Douglas stayed with the Allison.

Test pilot George Jansen, a former B-24 pilot, took up the first XA2D-1 at Muroc Air Force Base on March 26, 1950. As Heinemann noted, "We were far from pleased." Allison experienced continuing problems with the turboprop, delaying a production version for three years.

When the engine-airframe combination worked, the Skyshark looked promising. A developmental flight to 27,000 feet yielded 475 knots, or 40 knots more than specified. Initial climb rate was determined to be 7,200 feet per minute, and a 2,200 statute-mile range offered excellent tactical reach.



The Skyshark would have been armed with four 20mm cannon and up to 5,500 pounds on underwing hardpoints. Development continued, suffering a severe setback in December 1950, when test pilot Hugh Wood experienced an uncontrollable sink rate. He was unable to flare the aircraft, which smashed onto the landing gear with catastrophic results and killed him.

Upset at the endless engine problems, in the summer of 1952, Heinemann met with the Allison Division vice president of General Motors. Robert Evans pledged to stay on top of the T-40, expressing willingness to consolidate the engine and propeller portions of the project. But before Heinemann left he said, "If we can't make the Skyshark go, I am going to recommend cancelling the project altogether. We already have an alternative in the works."

The first pre-production A2D-1 flew in June 1953 but more engine problems plagued the Skyshark, most notably when C.G. Livingston conducted dive tests that year. In a high-G recovery his windscreen was clouded with oil, and the chase pilot radioed that both props had separated. Livingston saved the aircraft in a skillful dead-stick landing, finding that the gearbox had failed.

Another gear box failure in August 1954 forced George Jansen to use his ejection seat.

By 1954, the Navy was phasing out escort carriers for fleet use, and Douglas was making excellent progress on the previously mentioned alternative, the enormously successful A4D Skyhawk.

In all, 12 Skyshark airframes were produced including 10 pre-production aircraft. Four of the latter never flew. ✚

OPERATION BINGO

BY THOMAS MCKELVEY CLEAVER

Brenner Pass: Cutting the German Jugular

First Lieutenant Paul L. Jackson of the 445th Bomb Squadron, 321st Bomb Group, would long remember his thirty-seventh B-25 mission, March 24, 1945.

"As we flew away from the target, the guys in back called on the intercom to ask if we had taken a hit up front, since things were 'very windy back here.' We checked everywhere, but there was no damage. Our radioman then crawled into the space over the bomb bay and opened the inspection hatch to discover that one of our thousand pounders had hung up by its tail shackle. It was hanging out the bomb bay, preventing the doors from closing. Not only that, but the arming propeller on the nose was spinning. I looked over at my co-pilot — our first reaction was to consider bailing out before the bomb was fully armed. But we were still 30 miles behind the lines, over enemy territory.





Originally envisioned as a light bomber, the B-25 quickly became the do-all airplane in every theater in which it served. Field mods to add more and more Browning .50s became factory-standard and the Mitchell began fulfilling every ground attack, close air support and bombing role asked of it. (Photo by Paul Bowen)



Above: A well-used 57th Bomb Wing B-25 over the mountains of the Brenner Pass. (Photo courtesy of author)

Below: Ash spewed by Vesuvius in the eruption completely destroyed B-25s of the 340th Bomb Group based at Pompell airfield. (Photo courtesy of author)

There was a quick crew conference on the intercom and the radioman said he'd try something first before we bailed out. He then shucked his gear and lowered himself through that small inspection hatch to hang by his arms while he repeatedly kicked the bomb. After what seemed an eternity, the tail gunner reported the bomb had fallen free. He then pulled the radioman out of the bomb bay. When we got back to our base on Corsica, the first thing I did was write a recommendation for a Distinguished Flying Cross for our radioman."

For the B-25s flying from Ajaccio, it was just another day in a campaign that began the previous November 6. The squadron's war diary took no special notice, only that three 1,000-pound bombs were jettisoned after the mission: two at sea, one "over enemy territory."

Brenner Pass: The German jugular

The most famous of the passes through the Alps that separate Austria from northern Italy, the Brenner Pass is the lowest at 4,511 feet. Its possession has long been coveted, since it can be kept open in the winter without undue hardship. Before there were roads, the Brenner was the primary invasion route from the north into Italy. Hannibal's elephants may have passed through on their way to Cisalpine Gaul in 218 BC. The Alamanni crossed into Italy in 268 AD, where they were stopped at the Battle of Lake Benacus. The road was a track for mule trains and carts until a carriage road was constructed in 1777 at the behest of Empress Maria Theresa. The railway was completed in 1867; it is the only transalpine

rail route without a major tunnel.

During World War II, the pass was the main supply route for German forces in Italy. Following the liberation of Rome in June 1944, the Germans retreated to the Gothic Line, which ran along the crest of the Appenines from La Spezia to Rimini. With the best Allied units withdrawn for service in France, those remaining were too weak to crack the line before the onset of winter. If there was to be a breakthrough, German supplies and reserves had to be greatly reduced.

There was no "Sunny Italy"

Every day, 24,000 tons of supplies flowed through the Brenner, five times the minimum daily requirement for the Germans. If electrical power could be destroyed, they would have to replace the electric trains with steam trains. That would require trains from elsewhere when the entire German rail system was under attack. Planners believed doing so would cut the carrying capacity to 10,000 tons a day. While still double the minimum requirement, there would be little margin for error. Brigadier General Robert D. Knapp, 57th Bomb Wing commander, planned to destroy the 24 bridges. If German repairs were delayed or prevented, the Gothic Line could be cut off.

The codename was *Operation Bingo*. The four XII Air Force B-25 groups based in Corsica would carry out most of the operation, supported by fighter bombers of XXII Tactical Air Command and the RAF Desert Air Force.

Winter weather closed in at the end of October. Following two weeks of bad weather, November 6, 1944, dawned clear and cold. For then Second Lieutenant Paul Young, it would be his first mission. "There was no 'sunny Italy' that we ever saw. It was cold and damp, and hard to sleep through the night in our tents without waking up



DURING WORLD WAR II, THE PASS WAS THE MAIN SUPPLY ROUTE FOR GERMAN FORCES IN ITALY ... BRIGADIER GENERAL ROBERT D. KNAPP, 57TH BOMB WING COMMANDER, PLANNED TO DESTROY THE 24 BRIDGES



shivering. Coupled with the fact I had the jitters for my first mission, I had no trouble getting up when they woke us at 0500 hours.”

The 310th Bomb Group hit the transformers at San Ambrogio while the 340th and 321st Groups hit those at Trento. Electrical power was denied to trains as far north as Balzano.

A mortal threat to the Germans

Luftwaffe squadrons were not in Italy, since all had been pulled back to Germany for defense of the Reich. Only the three *Gruppi Cacci* of the *Aeronautica Nazionale Repubblicana* were available. They were re-equipping with Bf 109s after some pilots had destroyed their C.205 Veltro and G.55 Centauro fighters rather than join the Luftwaffe in September. Throughout the campaign, the ANR never had more than 40 aircraft available for operations at any time. The B-25s met little aerial opposition.

The Germans realized the mortal threat *Operation Bingo* represented. The primary defense was IV Flak Korps, with 366 88mm anti-aircraft guns stationed from Verona to Innsbruck. The “88” could fire a 9.24 kg (20.34 pound) shell to over 49,000 feet. The gun batteries used radar tracking for range and optical tracking for direction. German observers on the mountain peaks to either side of the pass were equipped

with transits that allowed them to determine an attacking formation’s altitude within a few feet. The guns could thus be fired with great accuracy.

In cases where clouds or smoke obscured the formations, barrage firing was used although it was not considered as effective as visual sighting. However, the barrage was most fearsome to the flyers who had to enter it. As Paul Young recalled, “A barrage looked like an exploding football field. When you saw that field of black explosions, you couldn’t believe there was any way through without being shot down.”

Italian forces fought alongside the Germans, using a 90mm cannon that could hit targets up to 26,000 feet, and a 102mm weapon that reached 40,000 feet. Additionally, the German Flak 37, a rapid-fire 37mm weapon, could hit targets at 15,000 feet, well above the common bombing altitude of the B-25s. The Italians had a 37mm weapon with similar range, and a 75mm cannon that could hit an airplane at 27,000 feet. The Mitchells bombed from 12-15,000 feet, which gave them the best chance of hitting a difficult target such as a bridge or railway. Thus, all these weapons could be brought to bear on the attackers.

The formations involved 12-18 airplanes, in groups of six. “We’d move into close formation before starting the run-in to the target, to concentrate our drop, then open up once we had

Following the eruption of Vesuvius in March 1944, the units of the 57th Bomb Wing were completely re-equipped with shiny new B-25J Mitchells. (Photo courtesy of Jack Cook)

Sporting fifty caliber gun packs, with the top turret turned forward, the pilot and crew could bring eight of John Browning's best to bear on a target. (Photo by Paul Bowen)



Many of the 321st BG aircraft arrived in bare aluminum, but, as with Lt. Yerger's Mitchell, Paper Doll, they received a coat of olive drab paint on their upper surfaces. (photo courtesy of Jack Cook)

SAVED BY THE MOVIES

In the late 1960s B-25s were headed for certain extinction. Airports across the nation were littered with deteriorating, dead, or nearly dead Mitchell carcasses that no one wanted and few could afford. Most of them could be bought for scrap value. Where fighters and the trainers were of manageable size, both physically and financially, the B-25 was just "too much" for most warbird enthusiasts. In only a few years they would have been smelted into beer cans. Then *Catch 22* came along.

Director Mike Nichols' 1970 screen version of Joseph Heller's

quirky WW II anti-war novel, *Catch 22*, saved a minimum of two dozen B-25s, returning them to service and making them available to future generations of restorers. Ron and Diane Fagen's magnificent restoration is the most recent Mitchell to take to the air. Obviously, the B-25's time on stage is far from over.



The Flying Heritage Collection's B-25 is restored to original specifications including the gunsights on the glare shield. (Photo by Heath Moffatt)



The two forward facing .50's were fed ammo via chutes from cans located at the rear of the compartment. (Photo by Heath Moffatt)

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B-25s over the rugged Alps, the tallest mountains in Europe. (Photos courtesy of Jack Cook)

unloaded," Young recalled. "Thus we were a dense target for all that dense flak." The defenses proved formidable. On November 11, 1944, a formation suffered 18 aircraft hit by flak and one shot down of a group of 22. At the end of November, the Germans moved 69 more 88s into the pass, a total of 435 along the entire route. By January 1945, batteries were located as far north as Bressanone, 20 miles from the Austrian border. The map Paul Jackson's bombardier had, with flak positions shown as red dots, had a solid red line half an inch wide, running from Bologna to Augsburg.

The guns were mobile and the Germans moved them around. Young remembered, "You'd approach a place where you'd been shot at on a previous mission, and begin to tighten up in expectation of running the gauntlet. Only there wouldn't be a single shot! Then, just as you relaxed, two or three would open up from a completely different position and scare the bejesus out of you worse than you'd been anticipating. It got to the point where I was just drum tight from the minute we crossed the bomb line till we flew back into Allied territory. That anticipation, the fear that built up, took a lot out of you over the long run." By January 1945, flak positions had been identified in the mountains to either side of the pass at altitudes up to 3,000 feet. One battery west of Ala was at 4,100 feet, just short of the crest of the pass.

American tactics

Anti-flak operations became standard, with three anti-flak planes leading the formation, dropping strips of "Window" to confuse the radar, and attacking flak positions with 100-pound white phosphorous bombs to burn the gunners and blow up the unused ammunition. The Germans considered use of white phosphorus to be chemical warfare, and announced that any captured bomber crews identified as having used white phosphorus would be summarily shot as war criminals. It happened to shot-down crews on at least three occasions between February 1945 and the end of the war in May.

In January 1945, 48 missions, 1,250 sorties, were flown over the Brenner. 39 missions drew flak, with 224 aircraft hit and damaged, and five lost. Even in the face of this opposition, the bombing closed the pass to through traffic on five separate days.

"Catch-22" Was Real

Since Italy had been declared a "secondary theater" after the Normandy invasion, replacements became hard to get. From their arrival in North Africa in 1943, the standard mission tour for B-25 air crews had been 50 missions. At the end of November 1944, the tour was increased to 55 missions, and to 60 by the end of December. The 319th Bomb Group flew its last mission the week



before New Year's and returned to the United States in January 1945 to re-equip with the new Douglas A-26. The 310th, 321st, and 340th were the only medium bomber groups left in the theater to carry on the campaign. A tour was increased to 70 missions.

Many aircrew did anything they could to complete their tour as quickly as possible. Paul Jackson recalled, "I told our operations officer he could assign me as first pilot or second pilot, I didn't care which, I'd fly any mission." The concept of flying with a regular crew changed. The B-25J had a crew of seven: bombardier, pilot and co-pilot, flight engineer/top gunner, radioman/waist gunner, waist gunner, and tail gunner. Without aerial opposition, the second waist gunner position was dropped, leaving a crew of six. Often, the six men of a crew would not know each other prior to the mission. After the war, a member of a crew that baled out over Switzerland reported that the day after their capture, they were told to attend a funeral. "We asked why and they said it was for our pilot, and asked us to identify him. None of us knew his name." In the novel *Catch-22*, written by 340th BG bombardier Joseph Heller, this causes Yossarian's recurring nightmare in which he's told to "help the tail gunner," and

no one in the crew knows the man's name.

The loss of crew cohesion, with crews changing from mission to mission, also lowered morale. Men did not know who they were fighting with, who could and could not be depended upon. As the tour total rose, aircrew attempted to get themselves removed from flight operations, even if it meant a transfer to the infantry facing the Gothic Line. The lack of replacement aircrew meant such requests were denied.

"Catch 22," the rule that a man who requested removal from flight duty on grounds of mental stress was actually sane and therefore must continue flying, was reality for the fliers of the 57th Wing. At the end of January 1945, personnel shortages were so great that each group lost the fourth squadron, with those aircrews distributed among the remaining three squadrons. The tour of duty was extended "for the duration of the war." Missions were flown every day the weather permitted, with many launched into questionable weather forcing aborts and returns.

Life on Corsica

Men who thought they would be flying in "Sunny Italy," found that northern Italy and Corsica could be as cold as the American Midwest. Paul Jackson

B-25s unload white phosphorus bombs on German flak sites below. The bombers were hurriedly re-camouflaged from paint available on Corsica after the attack by the Ju 88s of LG2 in mid-May 1944. (Photo courtesy of Jack Cook)

"CATCH 22," THE RULE THAT A MAN WHO REQUESTED REMOVAL FROM FLIGHT DUTY ON GROUNDS OF MENTAL STRESS WAS ACTUALLY SANE AND THEREFORE MUST CONTINUE FLYING, WAS REALITY FOR THE FLIERS OF THE 57TH WING

remembered, "We boarded up the tents as best we could, and we would supplement the coal ration by going out in search parties to cut down trees for fuel. We were cold on the ground, we were cold in the planes. I was just cold all the time." Fortunately, food was better than what many had in the Italian theater, since the wing staff felt that getting good food was necessary to maintain morale. "We flew regular runs to Sicily for food and liquor, but we still ate spam every way you could imagine: boiled, fried, things you wouldn't think you could do with it," Young remembered.

The campaign grinds on

In February 1945, the bombers went as far north as Innsbruck, Austria. Fortunately, even in Austria the Luftwaffe was so depleted that bombers seldom met fighter opposition. The German gun batteries shifted north and were increased at Trenton and Bressasone. New batteries appeared at Laves. The number of guns in the pass rose to 482. It was a rare mission now that did not draw flak. The German early warning system had been refined. When the incoming formation got within 200 kilometers (125 miles) of a defended area, the gun batteries were alerted. When the formation passed 80 kilometers (50 miles), the guns were manned. Course and altitude were given by the mountaintop observers. There were no surprise attacks.

In February 1945, 82 missions involving 1,771 sorties were flown. Sixty-two missions drew flak. Fourteen aircraft were lost and 305 were damaged, despite the increase in anti-flak operations. But the pass was closed to through traffic for eight days. It became necessary for the Germans to run separate trains through different sectors,

requiring unloading and reloading of supplies, with resultant delay in delivery.

In March 1945, the number of flak batteries increased yet again, especially in the northern Brenner Pass. Forty-three new guns were added for a total of 525. The Mitchells flew 96 missions during the month. Fifty-eight took flak with fourteen B-25s lost and 207 damaged.

By March, the campaign had met the planners' hopes. Traffic was cut 80 percent from the pre-November figure. Much of the Brenner was impassable by trains for days at a time due to the bombing. The slow strangulation of supplies became apparent to the men manning the Gothic Line. Troops were unable to use the lines for movement. Shortages of ammunition reduced fighting ability and effectiveness.

Victory

On April 6, 1945, the Allied offensive into the Lombardy Plain by Fifth United States Army, British Eighth Army and the Brazilian Expeditionary Force began. The last bridge-busting mission was flown on April 12. On April 14, the B-25s joined over 2,000 other Allied bombers of the Fifteenth Air Force and the Desert Air Force to attack targets throughout the Po Valley as the Allied armies forced their way through the Gothic Line.

On April 15, U.S. Fifth Army took aim at Bologna. Progress at all points against a determined German defense was slow, but the Germans lacked sufficient ammunition and reserves to keep up the battle, due to the success of *Operation Bingo*.

On April 20, German forces began surrendering in large numbers. On April 24, Field Marshal Albert Kesselring, who had led the brilliant German defense throughout the Italian campaign, surrendered all forces. The Italian campaign was over.

Between November 6, 1944, and April 22, 1945, when the last mission was flown, Paul Young chalked up an astounding 57 missions, a number which would have amazed any pilot in "The Mighty Eighth." He wasn't the only one. Captain Jack Valenti, of Dallas, Texas, (later a close assistant to Senator and then President Lyndon Johnson before becoming President of the Motion Picture Association of America for 40 years) flew 72 missions with the 340th Bomb Group. Valenti was among the aircrews who flew B-25s in Italy back to the United States during the summer of 1945. As he recalled many years later, "When I landed at Columbia, South Carolina, and climbed out of the plane, I knelt down, kissed the ground, and promised myself I would never ever fly another airplane." He kept his promise. His attitude was not unusual among the men of the 57th Bomb Wing who survived the flak-filled skies of the Brenner Pass.

The Brenner Pass campaign was the most successful sustained battlefield interdiction campaign ever waged by the Air Force. ✚

Nearly every B-25 used by the units of the 57th Bomb Wing sustained flak damage during the Brenner campaign. In November 1944 there were over 300 88mm flak guns, plus hundreds of 37mm weapons and Italian guns ranging from 75mm to 105mm. By March 1945, there were more than 500 of the deadly 88s. Every flak gun could reach the Mitchells at their bombing altitude of 12-15,000 feet. (Photo courtesy of Jack Cook)





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NEPTUNE'S FIRE

A P2V patrol ends in the Pacific

BY JAN TEGLER

There's a curious fact about Lockheed's P2V Neptune first flown in 1945. It is the only land-based U.S. Navy maritime patrol aircraft ever designed for the purpose. The Lockheed PV-1 Ventura and -2 Harpoon that preceded it; the Lockheed P-3 Orion that followed it; and the new Boeing P-8A Poseidon were all adapted from existing commercial aircraft designs.

It's trivia Ron Garman knows well. Garman's entire 40-year military career was spent aloft in maritime patrol aircraft. When the Navy wanted to make the senior enlisted man a command master chief in 1993 – a promotion that would likely have grounded him – he waved goodbye rather than carrying on in a non-flying billet.

After joining the Naval Reserve in 1954, Garman went to school to become a "PHA3" aerial photographer. Upon graduation he went on active duty at NAS Anacostia, Washington,

D.C. flying on R4Ds (C-47s), capturing images used for ship recognition and intelligence gathering.

PHA3 Garman enjoyed the work and the flying, remaining at Anacostia after transitioning to the Neptune and returning to Reserve duty at the air station. He was recalled to active duty in 1961 during the Cuban Missile Crisis, reverting to the Reserve at NAS Anacostia afterwards.

By 1964, the days of Navy aerial photographers were numbered.

"I was about the last known PHA3 flying," he explains. "The Navy did away with the PHA3 but they had one guy still floating around the Reserves — me. I had just taken the test to convert to AD (mechanic) for a plane captain job. I had passed the test but didn't know it at the time of this flight."

February 11, 1964: 1100 hours

The flight occurred during VP-661's annual two-week train-





The first mass-produced variant of the long-lived Neptune, the -2 series featured a six-pack 20mm gun nose installation and a significant upgrade to the P&W R-3350-24W engine at 2,800hp driving a 3-bladed prop. Eighty were procured that entered service in the late 1940s. (Photo courtesy of Stan Piet)

ing deployment. Several days earlier, the squadron's eight P-2Hs launched from NAS (NARTU) Anacostia on an uneventful cross-country to NAS Los Alamitos, San Diego, CA. (Redesignated from P2V-5s in 1962.)

"They were noisy and froze your ass off in the winter. In the summer you'd sweat down at low level," Garman remembers. "But it was something we couldn't stay away from."

Prior to the training cruise, Garman was plucked from a crew he'd served with during the Cuban Missile Crisis and re-assigned to make up for the squadron's plane captain shortage. Lt. Cdr. Clete Mishler was flying in the left seat with Lt. Bud Laynor as copilot. Sensor operators Hoppen (radar) and Harley (antisubmarine gear) were among the crew members, but time has dimmed Garman's memory of the others.

February 11 was the third day of the cruise. Garman and his crew prepared for the day's mission, an ASW training evolution in a "sanctuary box" 50 miles off the southern California

coast. Another VP-661 crew was conducting similar training in a box just to the north.

"The box extended 50 miles west with a north/south track of 100 miles. The hard deck was 1,000 feet," Garman recalls. "My duties were monitoring and recording the fuel burn and giving my attention to the engine instrument gauges."

Launching just after 1100 in perfect weather, the crew climbed toward their assigned "box." Both of the Neptune's Westinghouse J34 jet engines were online for takeoff in addition to the P-2's Wright R-3350 radials. Perched between the pilots on a folding bench, Garman had a front row seat.

"When we retarded the power on the jets, the number-one jet wouldn't power down. It stayed at about 96 percent power. To shut it down, I went to the circuit-breaker panel and pulled the fuel-breaker to starve that engine."

The crew decided to return to base to have the problem fixed. "It was just the fuel control rheostat so it was fixed pretty

quickly. Oil was added to the jet. It was tested and we flew out to the op area. The cranky engine shut down as advertised."

1730 hours

With their malfunction fixed, the Neptune launched again shortly before 1400. Training got underway with the crew following a navigational plot while dropping sonobuoys for sequencing and signal comprehension. Shortly before sunset, trouble struck.

"Around 1700 the wind was starting to pick up. We broke off a plot and climbed up to 3,500 feet to cool off a bit because it was hot down low. You could see clouds rolling in as it got dark. Most of the crew moved to the nav station to annotate and compare their logs. The sun descended into the Western Pacific and rain picked up, beating against the airplane. It was completely black — no stars. Then there was a lightning flash.

We were in a darkened condition inside the cabin so our night vision wouldn't be compromised. I turned side saddle on the bench, looked back and thought, *'Son of bitch! Somebody turned on the white lights in the aft station.'*

I started to speak up but looked back again and the light was out. I thought somebody screwed up then recognized it and turned the light off. But then I looked again and realized, *'Wait a minute. We're on fire!'*

I said to "Mitch" (Mishler), "Hey, we've got a fire back there!" He was calm and cool and said, "Get back there and see what it is." The emergency check lists were started. I dove over the wing beam into the aft station.

The fire was coming up through the deck.

My first thoughts were, *'Control cables and oxygen bottles.'* There were two fire extinguishers back there. I grabbed the extinguisher off the bulkhead. Harley and I started to spray them on the flames.

The force of the fire blew the powder back at me. It was the same for Harley. Flames were starting to spread around the stringer in the lower deck area and up the sides of the fuselage. The last bottle was in the nose. I went forward and told Mitch and Bud it was pretty bad back there. I said, "I've got one more extinguisher." He said, "Try it!"

I went into the nose tunnel but couldn't get the bottle out of the clamps. Pissed off, I laid back on the tunnel deck for a second and looked up at

Ron Garman, second from left, bottom row, and the VP-661 crew of *Jack's Rabbits*, an SP-2E Neptune based at NAS Anacostia, Washington, D.C. (Photo courtesy of Stan Piet)





I WENT BACK TO THE FLIGHT DECK AND TOLD THEM, "WE CAN'T GET THIS THING OUT. IT'S POWERFUL AND IT'S COMING OUT OF THE DECKING. I'VE NEVER SEEN ANYTHING LIKE IT!"

a crewman's face that was masked in fear. At that point the adrenaline really kicked in and I ripped the bottle from the bulkhead. It had no effect on the fire.

I went back to the flight deck and told them, "We can't get this thing out. It's powerful and it's coming out of the decking. I've never seen anything like it!" Mitch said, "Tell the crew to bail out!"

I turned around and Hoppen was sitting in the first seat in the Nav station. I told him, "We need to bail out!"

He and the other guys answered, "But some of our parachutes are in the back of the airplane!"

I said, "Well, we'll have to jump with the buddy system."

But the bailout hatch was aft too, in the deck just forward of the fire. I advised Mitch that all of the crew were on the nav deck because the fire in the aft station was blocking the deck hatch. He said drop the nose gear and let them bail out there. There was a ladder they could climb down. The bailout horn was blaring.

I yelled to Harley, "Gear up! You're getting out of here!"

He replied, "We're not going!"

I said, "What do you mean you're not going? Well then, you better strap in!"

The second mech was up in the nose and came running back when he heard the bailout horn. He didn't close the bow door to the nose and jumped up onto the crew deck and strapped in along with everyone else.

I told Mitch, "Nobody's leaving!"

He said, "All right, strap in."

Flying blind

Bud Laynor was sending the Mayday on 121.5. Mitch told Bud to turn on the landing lights but the downpour was horizontal and the lights reflecting off the rain totally obscured the view out of the cockpit. Mitch said, "Turn them off!"

I started to look around for my Mae West and harness. They were gone. Somebody must have grabbed them. Things were happening pretty fast so I couldn't be angry. I grabbed a loose flight jacket and put it on.

There was no ditching station for the plane captain in that model Neptune. So I went behind what they called the "electrical load center 186 panel" and sat down on the deck hatch that led to the nose. I couldn't strap in so I was just holding on, bracing. We were at less than 500 feet and I no longer had any view of what was happening.

Mitch was flying blind. He was estimating the wind direction and wave action, flying the radar altimeter right down to the deck. We slammed into the ocean but Mitch couldn't have timed it any better. You try to come down on the crest of a swell and he nailed it. The first impact wasn't too bad and I thought, "This is going to be ok."

The next thing I knew, the aircraft nosed into the following swell, blowing the plexiglas canopy off the nose. Water came firing back through the tunnel that led to the nose, hit the hatch that I was sitting on, and blew me up and into the overhead! It just about put my lights out and I didn't know what was going for a few moments.

As I reacquired my senses, I could see several members of the crew going out the overhead astro (observation) hatch from the fuselage to the

A long-serving aircraft, the Neptune was manufactured and modified to serve a wide series of disparate roles, but its primary mission was as a patrol bomber. The unusual combination of two jets and two Wright R-3350 engines (2,400hp each) allowed it to take off with heavy loads. (Photo courtesy of Stan Plet)

wing and into the water. My legs were numb but I could feel cold water filling the plane. I turned around to look at the flight deck. Neither Mitch nor Laynor were there. The crew was well trained and everybody knew what to do. They got out.

Still, I wasn't sure that everyone was out and drifted in the water to take a look into the radio compartment. The airplane was cranked up with the nose sinking first and the tail up in the air. The radio compartment was a twisted mass of metal. I thought, "No one could have survived in there."

I floated toward the astro hatch and started up and out. As I pulled through the hatch, I saw most of the crew in the water off the starboard side but no pilots in sight. Hanging on to the edge of the hatch, I lowered into the plane and looked into the cockpit again. I thought, "What the hell am I doing?" My mind still wasn't functioning properly.

Pulling myself back up, I saw the damage to the plane. The tail was twisted up and rotated to the right about 45 to 60 degrees. Smoke and steam were rising through the remains of the after-station and the smell of av-gas permeated the blowing wind. The crew had gathered together. Fighting the wave action, the pilots swam past the starboard wing toward them. I slid down onto the right wing and the crew was hollering, "C'mon! C'mon!"

We all survived

I went into the water and what saved my ass was the flight jacket I had grabbed. Air got trapped in it and it billowed up like a Mae West. Hoppen, I think, and several others grabbed me and started pulling me to the group. Mitch did a head count. We had all survived. He was trying to herd everybody toward the single survival raft.

As we pulled away, the plane sank in about four minutes. We watched in silence. There had been another raft on top of the aircraft but it was gone, nobody knew where. The second, near the wing area, had been ripped apart in the ditching so it was useless. They were seven-man rafts. Nine of us would have to get aboard if we could get hold of the remaining one that was floating.

I don't remember which, Harley or Hoppen, one of them was a class A swimmer. One of those guys saw the raft quite a distance away and went after it. The winds were very high. Mishler was yelling, "Get your ass back here right now!" Twenty minutes later, the raft came into view being paddled by whichever guy it was. It was amazing!

It was estimated that we ditched about 20 to 25 miles off the beach. In reality, we must have been closer because when we crested a wave we could see the distant lights of the shore line, probably the highway going down the California coastline.

The Los Angeles Times did a story on our ditching and said the waves were estimated at 20 to 26 feet.

The versatile Neptune was even called upon to perform one-way nuclear strike missions as the Navy sought to be a player in "special weapons" delivery from forward-based carriers. Twelve, stripped as P2V-2Cs, were converted for the task with extra fuel, JATO bottles, and modified bomb-bays. Assigned to VC-5, CarQuals were performed from the USS Coral Sea in March 1949. (Photo courtesy of Stan Piet)

THE AIRPLANE WAS CRANKED UP WITH THE NOSE SINKING FIRST AND THE TAIL UP IN THE AIR. THE RADIO COMPARTMENT WAS A TWISTED MASS OF METAL. I THOUGHT, "NO ONE COULD HAVE SURVIVED IN THERE."



After about an hour in the water we all boarded the raft. I couldn't feel anything in the lower half of my body so I didn't have any pain. I think my shoulder hit the overhead when the hatch popped up, not my head. I was wearing a helmet.

Only the Navy was flying that night, nobody else. But the FAA centers at Los Angeles, San Francisco, and even Seattle – everybody triangulated our signal and knew almost immediately where we were. They sent Lt. Cdr. Dave Satterfield and his crew, the airplane that had been to the north of us, to try and find us. Close to another hour later, we heard the sound of an aircraft's engines above the roar of the wind.

Satterfield was flying near us but none of the single-cell flashlights on our Mae Wests worked. Nobody even checked them in those days. The flares we had were soaked as well. Mishler had a .38 caliber revolver in his jacket with tracer bullets in it. The jacket I had grabbed was Mishler's.

When we got into the raft I had to lie down because I couldn't move really. I had my head on Mishler's legs. I pulled the gun out of his jacket and Mitch said, "Oh!" Before I knew it, he was firing away straight up. Pow-pow-pow!

"Don't argue with me, sailor"

Satterfield was just crossing our position and saw the tracers. His crew threw out a flare pattern within a couple hundred yards of where we were. After Mitch had fired his weapon, I grabbed it and put it back in the flight jacket. I don't know why.

In about an hour, a Coast Guard HH-52 helo came on the scene. As he lowered his basket, Mitch and I had a debate about who was going up. I said I wasn't going. He said I was. I lost.

But as the helicopter crew let the basket down, the aircraft sank into a trough and the crest of a wave hit its tail rotor. The helo spun around and slammed down right alongside our raft!

A couple of the crew in the raft tried to push us away. As the helo tilted, the blades were slashing into the waves. The rescue swimmer in the door was thrown out of the aircraft. I was laying prone and couldn't see the helicopter but I could feel the concussion of the blades hitting the water. I rolled over to see if Mitch was OK. It looked like he had been cut in half by the rotor blades.

That vision drove the remainder of the sea water I had swallowed back into the raft. A wave pushed the helo down on the far side of the raft, keeping the whirling blades above us enough to give the

crew time to push away and clear the helo. At that point Mitch sat up. Thank God he was ok.

We heard a voice shout for help. Airman Lewis, tossed from the helicopter, was yelling, "Hey! Help me!" Now it was our turn to rescue him.

The helicopter was still running, riding the swells and the pilot was going around in circles, trying to keep his nose into the wind. The one emergency radio we had didn't work. But I think the pilot in the Coast Guard bird must have been on his radio talking. The rescue swimmer we had pulled into the raft was flashing his spotlight at the HH-52 pilot, trying to tell him to get away from the raft.



Meanwhile, a Marine unit at Santa Ana had been alerted to our situation. A UH-34D crew launched to come get us. I learned later that they got into a lot of trouble because they had been told by the station ops not to go.

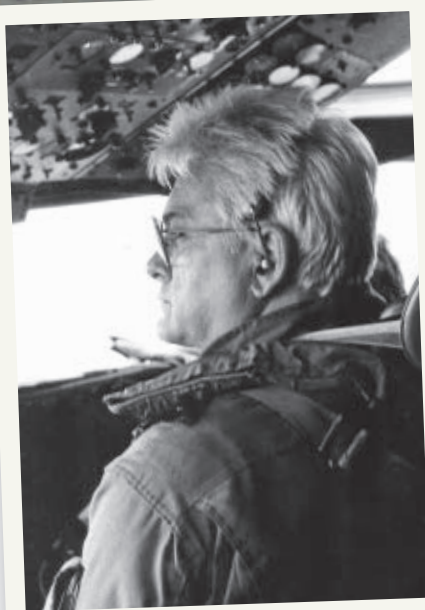
But the pilot and his crew chief said, "Screw em. We're going anyway. There are airmen out there." And they took off. I heard the pilot was fired from his squadron and sent to Japan thereafter. I never got to thank that guy.

Well, the Marine helo crew arrived about an hour later and were getting ready to hoist some of us out of the water. Mishler said to me, "You're going up first." I said, "No, I'm not."

He said, "Don't argue with me, sailor." And he threw me in the water.

Amazingly, the flight jacket trapped air again, keeping me buoyant. I made my way to the basket, crawled into it and the Marines hoisted me. Then they hoisted another couple of the guys but the weather at that point was beyond acceptable limits for the helo. So they left and hauled us to Camp Pendleton. The rest of the crew was picked

Two "Polar Bear" P2V-2L(N) Neptunes were converted under Project "Ski Jump" for Operation Deep Freeze in 1955 as seen here transitioning from NAS Patuxent River. They were fitted with a 16-foot aluminum ski/wheel retractable gear combination and an early MAD set for survey work in the Antarctic where one was lost in a blind landing accident in April 1957. (Photo courtesy of Stan Piet)



A seldom-recognized role played by the Neptune was VO-67's intelligence flights over the Ho Chi Minh trail planting electronic sensors. It also gave support to the fire base at Khe Sanh, in South Vietnam during the Tet Offensive. (Photo courtesy of Stan Piet)

Inset: Ron Garman spent his entire Navy career aloft in maritime patrol aircraft. An airman's airman, he politely declined in 1993 when the USN wanted to promote him to Command Master Chief, preferring to part ways with the Navy rather than take a non-flying billet.

SUBSEQUENT EXAMINATIONS OF OTHER P-2S BEING DECOMMISSIONED AT NAF LITCHFIELD PARK REVEALED ACCUMULATIONS OF OLD HYDRAULIC OIL IN THE BILGES UNDER THE AFTER-STATION DECKING.

up the next morning by a Coast Guard cutter.

I was pretty disoriented so I don't remember the ride back. At the hospital they started to work on me. I had crushed vertebra and a compacted ileus. I was still in the flight jacket that had Mitch's name tag attached, thus the docs thought they were dealing with a Navy lieutenant commander.

The doctors were asking me questions and it took me a few moments to answer. At that point I reached into the inside pocket of the flight jacket and I pulled out the .38!

Everybody backed off and said, "What the hell are you doing with that?" I said we were using it to shoot at the other aircraft but I was a bit out of my mind. It was kind of comical in retrospect.

They were not a happy group — even less so when they found out that they had a PHA3 wearing an officer's flight jacket and carrying a loaded weapon. Order was restored after a lengthy discussion with the squadron. My legs were scorched from the fire.

After a few days of painkillers, I was given the first of three post-ditching boards. The rest of the crew received one.

Back for more

Ron Garman made a full recovery but the Navy

accident board investigating the Class-A mishap needed concrete evidence as to the cause of the fire. Garman himself was under scrutiny because the ground crew at Los Alamitos related to the board that a can of oil used to top up the J34 jet that had failed was still half full.

The board received information that Garman placed the oil can on the deck of the P-2 near the after-station. Garman strongly refuted the claim and was cleared when one of ground crew remembered taking the open can to a bowser in a nearby hangar.

Subsequent examinations of other P-2s being decommissioned at NAF Litchfield Park revealed accumulations of old hydraulic oil in the bilges under the after-station decking. Some 1800cc oxygen bottles were found lying horizontal in the bilge areas. Each had piping leading from the bottle head through a stringer and into a pressure relief valve 19 inches from the bottle head. Heavy friction wear was found in the lines going through the stringer to the pressure relief.

Conclusion: The piping was worn through and pure oxygen leaked out, mixing with the bilge oils. Instantaneous combustion occurred, setting off a raging fire.

"We were damn lucky not to have blown up," Garman said. "They stood the other P-2s down which had the same configuration."

Ron Garman was the only member of the crew that February afternoon to continue flying, enjoying a long, rewarding career. ✚

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Keeping the cold beer flowing

BY BUDD DAVISSON

Does this picture really need explanation? It's unknown whether the Axis routinely ferried beer to the front lines in drop tanks, but, reportedly, most of the Allied powers did. What's more, it wasn't unusual to top off a Mustang's or Thunderbolt's drops with beer, then have the pilot take a trip up to 30,000 feet to cool it off for the rest of the squadron. Sort of a "mercy mission." In support of the troops and all that.

There are no reports of suds-equipped fighters getting bounced by the bad guys, while so equipped, but it can be imagined, the response of the locals, when a lager-laden drop tank had to be jettisoned in haste. It would spew its contents every direction on impact raising logical questions: "I say, old chap, I thought those kites ran on gasoline. No wonder beer is being rationed."

The photo is most likely a publicity stunt for "Watney's Red Barrel" beer, a popular brand during WW II. The pilot, thought to be a "Cloggy," as the Brits affectionately called the Dutch, appears to be casting a covetous eye on the proceedings. ✈







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In return, the new member would receive a membership card, silver-colored for ages 10 to 15, and gold-colored for 16 to 21. Each recruit also received a wing pin, silvered for ages 10 to 15, and gilded for 16 to 21.

The U.S. government was in favor of it all. The April 14, 1934 *San Francisco Examiner* mentioned a radio interview with a Colonel L.W. McIntosh, an officer in the Ninth Corps Area, of the U.S. Army. Colonel McIntosh said the organization would benefit both American youth and the nation, for "They will be taught just about everything there is to know about aviation, short of an actual course in a flying school." Sometime later, in fact, the Junior Birdmen even adopted the motto, "Today, pilots of models — tomorrow's model pilots."

The first model airplane project appeared in the May 30, 1934 Hearst newspapers, for a "Baby All Balsa Glider." It was chosen for being fairly easy to construct, while still being useful for teaching the fundamentals of model building.

The May 30 column included a diagram of the finished plane. The final steps were given in the May 31 column.

The Junior Birdmen went all out for their first July 4 holiday week, in 1934. Tournaments took place across the nation, sometimes with several Flight Squadrons

DURING WORLD WAR II, THE JUNIOR BIRDMEN TOOK PART IN A GOVERNMENT PROGRAM TO BUILD MODEL AIRPLANES TO HELP TRAIN THE MILITARY. SOME OF THE OLDER MEMBERS ENTERED THE ARMED SERVICES.

each pooling their resources. Winners of local contests could go to Washington, D.C., to compete in a nationwide contest on July 28, 1934. The winner could choose a trip to Europe or a \$500 aviation scholarship (worth almost \$9,000 today.)

In August 1934, the organization began issuing books containing complete lessons plans for constructing models, for those who may have missed earlier newspaper columns.

During World War II, the Junior Birdmen took part in a government program

to build model airplanes to help train the military. Some of the older members entered the armed services, one of whom was Boyd "Buzz" Wagner, of Johnstown, Pennsylvania.

Wagner had been interested in airplanes since childhood. In 1936, he even

won a Junior Birdmen contest. Wagner became famous in the days just after the December 7, 1941 Pearl Harbor attack. In the Philippines he was credited with shooting down several Japanese planes. When he was lost in an accident in Florida, his total score was eight victories.

After the war, with the mood of America greatly altered and pointed in different directions, the Junior Birdmen of America slowly faded away. They, however, had left a long-lasting mark on the nation, just the same. ✚

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The Junior Birdmen of America

A time when aviation was a youth activity BY JOHN LOCKWOOD

As airplanes ceased to be novelties and became a major part of American life, the 1930s saw an explosion in the number of aviation clubs across the country.

Probably the most successful of all was the Junior Birdmen of America, founded by the newspaper magnate William Randolph Hearst.

It all began Sunday, April 8, 1934, when the 17 Hearst-owned newspapers announced the formation of the new organization for boys and girls, from ages 10 to 21. There doesn't seem to have been any racial barrier: the membership form emphasized it was for "all" youth.

Each Hearst newspaper was responsible for its local "territory," so the whole nation was covered. The initial announcement stated that the following Sunday, April 15, 1934, there would be a daily aviation column. The columns would cover aviation topics of both national and local interest, such as local air meets.

The front page of the April 8, 1934 *Chicago Herald and Examiner* mentioned how Mr. Hearst had earlier helped sponsor the founding of the Boy Scouts in America, working with his friend, Sir Robert Baden-Powell, who had created the original Boy Scouts in Britain. The paper added that Hearst considered the Junior Birdmen of America to be "just as important and even more interesting to boys and girls of America."

Perhaps the most impressive April 8, 1934 announcement was in the *San Francisco Examiner*. It filled an entire page. It stated that the daily column would touch on "... model plane building and competitions, trips to airports and airplane factories, popular pilot polls, annual banquets...", plus accounts of famous air aces, aviation history, and lessons in aviation terminology.

THE PAPER ADDED THAT HEARST CONSIDERED THE JUNIOR BIRDMEN OF AMERICA TO BE "JUST AS IMPORTANT AND EVEN MORE INTERESTING TO BOYS AND GIRLS OF AMERICA."

Later issues also had question and answer sections. For instance, 15,000 feet high was the average limit for flying without pressurization or an oxygen mask. Or, an altimeter, for measuring height, was really an aneroid barometer that relied on changes in air pressure.

The columns would also advise its readers how to form local chapters, or Flight Squadrons, in their towns and neighborhoods. Each Squadron originally needed a minimum of 20 members, though by July 1934, the number had been reduced to 10. A squadron could name itself after aviators or aviation topics. The name Amelia Earhart, needless to say, was snapped up almost at once.

New members could, after six months, take a quiz and become an Eagle member. Six months later, they could take a second quiz, and if they passed become an Ace. The quizzes weren't all that easy. By 1937, there were about half a million Birdmen, of whom only 355 were Aces.

How to join? The daily columns usually included a membership form, with space for one's name and address. Also, the aspiring member had to include one dime in the mail. The form, for whatever reason, specified it was to be a dime. Nickels and pennies weren't mentioned. The dime was to be carefully wrapped up in a piece of paper, and attached to the membership form.



During the 1930s, when aviation was a young and vibrant industry, William Randolph Hearst formed the Junior Birdmen to bring young folks into the fold.

Continued on page 65

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